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ABSTRACT

This guide provides ways in which school board members can lead their school systems to higher levels of student achievement. The text attempts to help board members by equipping them with comprehensive information about the various components of student achievement. Part 1 analyzes the purposes of education and defines student achievement, and standards and achievement. Part 2 presents a four-part approach to developing an action plan: vision setting, establishing a successful learning environment, exercising accountability, and creating vital connections with the community. Suggestions for developing, implementing, and overseeing a student-achievement agenda and the vital process of public engagement are also discussed in this section. Part 3 then provides a guide to testing and other indicators of student achievement and school quality, and offers guidance in interpreting test scores and understanding such concepts as selection bias, statistical significance, and educational productivity. The last section discusses other indicators of achievement and school quality and shows how by using measures, such as levels of teacher education or per-pupil expenditures, school boards can assess progress and thus design programs to reflect their communities' unique values. Two appendices provide student achievement resources and opportunity to learn indicators. (RJM)

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Raising the Bar

A School Board Primer on Student Achievement

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LEADERSHIP FOR STUDENT ACHIEVEMENT

National School Boards Association

·NSBA·

This primer on student achievement wraps the complexities of the issue in clear, non-jargon-laden language. It provides comprehensive information and offers useful strategies. If efforts to implement standards-based reform are to succeed, local district resources and policies must be appropriately aligned – and the leadership and understanding of school board members are essential.

Michael D. Usdan
President
Institute for Educational Leadership

If the grass roots of community support for public schools are to be energized across this nation, the grass tops – the school boards – must take to heart the vision and concepts in this primer.

Gene R. Carter
Executive Director
Association for Supervision and Curriculum Development

This primer for school board members on student achievement is a welcome addition to the literature on school improvement. It is highly readable, and it provides excellent background and a balanced view of the issues. I would recommend it, not only to school board members, but also to superintendents as a vital addition to their library on the subject.

Paul D. Houston
Executive Director
American Association of School Administrators

This volume offers an array of practical assessment tools for school board members who want to do their jobs better. It offers specific examples of how to implement effective school improvement programs, as well as case studies of successful programs in place around the country. Most important, it stresses the need for getting and keeping parents and community leaders involved in the school reform process. Anyone with a stake in the education of America's children should count this book as a valuable resource.

Lois Jean White
President
National PTA

Raising the Bar

A School Board Primer on Student Achievement

By Gerald W. Bracey and Michael A. Resnick

Principal Authors: Dr. Gerald W. Bracey, a nationally recognized researcher and commentator in the student achievement field, wrote much of the substantive content for this primer. Michael A. Resnick, NSBA Associate Executive Director, wrote the section describing the vital role of the local school board and directed the project. We thank them for their efforts in explaining this important topic so thoroughly and well.

Other Contributors: Darrel Drury, NSBA Director of Policy Research, and Judith Brody Saks, an independent education writer, also made substantial contributions to this primer.

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Foreword

As we prepare to enter the 21st century, raising student achievement in our nation's schools has become the principal domestic policy issue facing communities across America. At national, state, and community levels, this vital theme has become the focus of unprecedented debate and energy. Across the United States, local school board members and state school boards associations are seizing the initiative to raise student achievement. They are frequently joined by parents, the business community, civic leaders, and the media, all of whom have an important stake in the education of our nation's young people.

The National School Boards Association (NSBA) has made the educational achievement of all children its chief priority. Over the next year, information, especially designed by NSBA to support the leadership of local school boards on student achievement issues, will be featured at our annual conference, on our Web site, and through association publications. NSBA is committed to providing local school board members and state school boards associations with relevant and comprehensive information to enhance local school boards' effectiveness in setting policies to raise student achievement in their communities.

This primer, which is intended to serve school boards of every size and in every locale (and which is being made available without charge to Federation and National Affiliate school districts), is a substantively rich guide. It provides: (1) the content knowledge that local school boards will need to make the best decisions about raising student achievement; (2) the strategies that school boards can use to govern more effectively; and (3) a guide to other key information sources. In short, this primer is designed to help school board members use the power of their office to lead their school systems to higher levels of student achievement.

We hope this primer will be useful to you and that it will support our shared goal to enhance school board effectiveness in raising student achievement in local communities across our great nation.

Sincerely,

William B. Ingram
President

Anne L. Bryant
Executive Director

Introduction

Raising student achievement is the most important challenge facing local school boards today. While the challenge is clear, the depth and scope of the issues and the dynamics involved in creating an action plan to raise achievement are complex. The goal of this primer is to encourage local school board members to use the power of their office to lead their school systems to higher levels of student achievement. This publication aims to help school board members become more effective educational policy leaders in two ways: by equipping them with comprehensive information about the various components of student achievement and by offering suggested strategies for reaching their targets.

Part One analyzes the purposes of education, which, in turn, will help answer the essential first question: "What do you want student achievement to mean in your school district?" Since today's debate on student achievement is often tied to the core issue of raising the academic performance of students, as measured by specific standardized tests, this part also provides a broad overview of standards and the current standards movement.

Part Two of the primer deals directly with the role of the local school board. School board members will want to use the substantive content in this publication to design a blueprint for action. This section presents a four-part approach to developing an action plan: vision setting, establishing a successful learning environment, exercising accountability, and creating vital connections with the community. Part Two also contains "The Power of the Question," which suggests basic, strategic questions school board members may ask as they begin to develop, implement, and oversee a student achievement agenda. While these questions have a strong standards-based reform component to them, they also describe other dimensions of student achievement. Finally, Part Two deals with the vital process of public engagement. It describes steps school boards can take to encourage the community to join with them to define a vision and goals and to strengthen programs and support for student achievement activities.

Part Three, a guide to testing and other indicators of student achievement, examines the variety of standardized achievement tests which many school districts across the country currently use to measure academic achievement. This section offers guidance in interpreting test scores and understanding such concepts as selection bias, statistical significance, and educational productivity. It also should help school board members create the important connections between test results (and what they do or do not reveal) and the policy, budgetary, and program decisions school boards will make based upon those results.

Because tests are not the sole indicators of how a student, school, or school system performs, Part Four discusses other indicators of achievement and school quality. Using measures such as the level of teacher education or per-pupil expenditures, school boards can assess progress and design programs to reflect their communities' unique demographic profiles and values.

No single document can provide all the information available on student achievement. However, Appendix A lists key government agencies and organizations that can supply a wealth of material, including useful studies and innovative practices, to school board members. Taken together, these additional resources can offer local school board members a plethora of ideas to raise achievement levels in their school systems.

As an addendum to Part Three, Appendix B discusses several key out-of-school variables that can influence student achievement, such as poverty, mobility, and demographic trends. These factors, which relate to both education and the quality of students' lives, should be weighed carefully as school boards develop their achievement plans.

Finally, NSBA urges school board members to keep one overarching question in mind as they read this primer: "How can my board and I use this information to create a plan that successfully raises the achievement levels of all students in our district?"

Part One:

Setting the Context

Defining Student Achievement

Education deals with the "good life," observed Aristotle. Thus, it follows that, inasmuch as people disagree over what constitutes the good life, there will be a corresponding disagreement over the purposes of education. In light of these differences, before embarking on the task of developing an action plan to raise achievement, school boards must first define student achievement in ways that are meaningful to the individual communities they represent. Board members must ask: "What is the vision that we hold in common for individual students and for the entire school system when we say students are achieving?"

While the current debate over educational achievement often narrowly focuses on students' ability to perform well on certain standardized tests, student achievement can be more broadly defined to include an array of educational goals:

- Academic attainment;
- Job skills and preparation;
- Citizenship (e.g., volunteerism, voting);
- Appreciation of the arts; and
- Development of character and values (e.g., integrity, patriotism, work ethic).

These goals, which relate both to individual quality of life and to the broader public interest in education, might well become part of a school board's definition of student achievement and might be included in a district's plans and programs. A brief look at several purposes of education that this nation has historically valued can serve as a starting point for school board discussion.

Civic Purposes

Thomas Jefferson saw one purpose of education as that of protecting us from our government, and, quite likely, he would be appalled at the low voter turnouts and civic apathy characteristic

Thomas Jefferson saw one purpose of education as that of protecting us from our government, and, quite likely, he would be appalled at the low voter turnouts and civic apathy characteristic of modern-day America.

of modern-day America. Jefferson might well attribute these shortcomings to the failure of schools to instill in students an understanding of their proper role in a democratic society.

In authoritarian and totalitarian societies, people are told what to think, and critical thinking can be dangerous. But, in a democracy, people must learn to think for themselves, carefully evaluating the information flowing to them—whether it be the claims of an automobile maker, the views of candidates competing for public office, or conflicting assertions concerning the effects of gas emissions on the environment.

In discussing the purposes of education, school boards may want to consider the ways in which their school district ensures that students learn to think critically at a time when young people are inundated with more information from more sources than was ever before possible. Board members may also want to look beyond state or district-mandated citizenship tests to determine how well their school system is preparing students to accept the responsibilities of citizenship in a democratic, pluralistic society.

Economic Purposes

One of the key purposes of education has been to enhance the economic well-being of both the individual and the nation as a whole. These two goals are interrelated, since America's economic health depends upon the purchasing power of its citizens and its ability to compete in world markets.

The school's role in helping people up the economic ladder of this society, recognized since the Civil War, is even stronger today. While education does not guarantee a specific wage, it does provide the opportunity to earn a higher income, as several indices demonstrate. For example, according to the first International Adult Literacy Survey, Americans reading at the highest two levels are more likely to be in the fourth and fifth quintiles of income, while very few individuals (a mere 3.6 percent) in the two highest income categories read at the lowest level. Another survey found that completion of each educational level, from high school diploma through doctorate, virtually doubles the average income of its holders.

Education not only affects an individual's chances, but it also has an economic impact on society as a whole. In fact, many view schooling as "The Great Sorting Machine" because it affects the distribution of wealth in this country. That role is likely to increase as we continue to move from an industrial society, which offered an abundance of low-skilled but not always low-paying jobs, to an information society, where knowledge is a key factor for employment. Those with little or inadequate schooling are likely to be left by the wayside. And, while current unemployment rates are low, due in part to the increase of jobs in the service sector, many of these positions pay low wages and offer only part-time employment. The average work week for today's retail salespeople, for example, is just 28 hours.

The quality of schools and the students they produce also influence our nation's ability to compete globally, although that link is less clear than many imagine. "A Nation At Risk," published in 1983, contended that "If only to keep and improve on the slim competitive edge we still retain in world markets, we must dedicate ourselves to the reform of our educational system for the benefit of all." That world view became very popular in the late 1980s, when the economy

slid into recession and some version of the "lousy-schools-are-producing-a-lousy-workforce-and-that-is-killing-us-in-the-global-market" theme could be heard in many quarters. Others, however, saw from the beginning that the link between the quality of America's schools and a weak economy is tenuous, at best. In *Popular Education and Its Discontents* (1989), the distinguished education historian Lawrence Cremin made this observation:

> American economic competitiveness with Japan and other nations is to a considerable degree a function of monetary, trade, and industrial policy, and of decisions made by the President and Congress, the Federal Reserve Board, and the federal departments of the Treasury and Commerce and Labor.

The accuracy of Cremin's comments became evident in late 1993, when the economy came roaring back even while critics claimed that schools had not improved. In *The Atlantic Monthly*, journalist Peter Schrag declared that it was "embarrassing" to read the thesis of "A Nation At Risk" today. That point was further underscored with the recent collapse of Asian economies. The entire Southeast Asia Region had to ask international agencies for bailouts—even though Asian students continued to score high marks on international math and science tests.

While the quality of our schools may be overstated as an influence on the current national economy, at the local level, student achievement can have a very real influence on the business decisions that are made and the economic well-being of specific communities. When faced with expansion or relocation decisions, firms do take into account the quality of schools as one factor. For example, when the German car manufacturer BMW decided to build an automotive plant in South Carolina, it weighed its options carefully, basing its site selection, in part, on the quality of local schools.

Education cannot guarantee that all people will achieve their employment or income goals. However, in 21st century America, large segments of the population will likely never have adequate resources without a solid education. Therefore, school boards must determine whether their schools are presenting a challenging curriculum that allows all students to obtain the knowledge and skills they need to participate fully in the economic opportunities this society, and the world, offer. Local boards will want to make certain that their policies are not inadvertently tracking certain segments of their school populations into jobs with little future.

Aesthetic Purposes

Beyond its civic and economic purposes, education also serves an important aesthetic purpose that contributes to the quality of life and general well-being of society. Mathematician Israel Sheffler defined education this way: "The formation of habits of judgment and the development of character, the elevation of standards, the facilitation of understanding, the development of taste and discrimination, the stimulation of curiosity and wondering, the fostering of style and a sense of beauty, the growth of a thirst for new ideas and visions of the yet unknown." While some of these qualities would assist a person in a quest for a high-paying job, many of them have no immediate utilitarian function. They are qualities we might consider good outcomes in and of themselves. School board members might want to keep Sheffler's definition in mind as they discuss the many dimensions of achievement.

One purpose of education is to enable people to have rich intellectual, social, and emotional lives off the job, as well as to be productive on it.

Although the American worker is the most productive in the world, many people worry about the tendency of Americans to watch hours upon hours of mindless television and to engage in activities that benefit neither family nor community. One purpose of education is to enable people to have rich intellectual, social, and emotional lives off the job, as well as to be productive on it. Again, school boards might want to consider whether they are producing students who have gained the habit of critical judgment and the desire for lifelong learning.

Finally, school board members must re-examine the values and characteristics which make their communities unique. As they discuss the individual, local, and societal purposes of education, local school board members may want to consider these questions: Is our school system fulfilling its role? What does our school system have to do—and what do our students need to learn—to fulfill our vision of a school district where all students are achieving at their highest potential? Answers to these questions will help in developing a plan of action to raise achievement, however one may define it.

Standards and Achievement

As Americans focus their attention on achievement in the nation's schools, there is growing concern about the accountability of schools and school districts. Concerns about meeting standards are at the center of this debate.

In the present context, "standards" refer to both subject content and student performance levels. Content standards mean the knowledge or skills that students need to possess at a particular grade level or in a particular course. Performance standards refer to the level of proficiency or mastery of knowledge that students must acquire—as measured by a test. That is, how high do we set the bar?

Virtually every state (Iowa is an exception) has initiated standards-based reform which focuses on state-prescribed standards. While these standards will influence local curriculum by prescribing minimum competencies which students must achieve, they do not tell a school district how to reach those goals, nor do they set any limits on what students can achieve.

Beyond this, standards raise certain alignment issues which must be addressed. If students are to achieve the standards set by the state or local school system, those standards and the tests that measure how well the standards are being met must be closely aligned. Using a test that does not accurately measure whether or not students are achieving the standards that have been set does not provide useful information and may, in fact, lead to misguided decisions for "improvement." Likewise, both standards and tests must be aligned with the resources (such as textbooks and curriculum) that are made available to students.

The Standards Movement: Historical Background

Calls for school reform were heard in earnest just after World War II. These calls were largely for changes in what was perceived to be an outdated curriculum. Students were studying Newton's laws when they should have been learning about subatomic particles and memorizing phyla when they needed to know about evolution and ecology. More recently, the idea has been put forth that American students do not achieve more than they do because they are not

held to high standards. In their review of the National Assessment of Educational Progress (NEAP), Willard Wirtz and Archie Lapointe wrote:

> By the early 1970s, the national sense developed that educational quality was deteriorating rapidly and dangerously. It was not entirely clear how far this went, how general it was, or what measure of fault was the schools'...So it was decided...in one State after another...to move in directly on the schools, not with funds, but with "standards." (*Measuring the Quality of Education*, 1982).

Historically, standards have provided a means of recording magnitude without imposing value judgments. Thus, at the National Institute of Standards and Technology, carefully calibrated platinum rods are used to define standards of length, but they are silent on whether a particular length is good or bad. Standards have been used in this way in education as well. But, since the 1980s, education has adopted a different definition of standards, a definition which contains a sense of requirement, excellence, and attainment. That is, standards today frequently refer not only to what students do and do not know, which was the role of the National Assessment initially, but also prescribe what they ought to know. Specific standards of performance are established and students are held accountable. The reality of applying this definition of standards has been a bit more complicated than the rhetoric, however.

Students were studying Newton's laws when they should have been learning about subatomic particles and memorizing phyla when they needed to know about evolution and ecology.

Outcomes-Based Education

The first round of standard-setting activities generally went under the name of Outcomes-Based Education (OBE). OBE was initially a purely cognitive program that would define what children should know and be able to do and measure how well they performed on these objectives. All students would be presented with a challenging curriculum.

The OBE movement soon confronted two problems, however. First, as states began to define "outcomes," many slipped out of the purely cognitive realm and into, on occasion, the affective. They inquired about students' "feelings" and, in some instances, prescribed how students should feel. They delved into self-esteem. In so doing, they moved into areas that some people thought were improper intrusions of the school (and, therefore, the state) into a realm properly left to the family.

There was another objection to OBE, although not quite so inflammatory. OBE advocates contended that "all children can learn." They would teach all children the same challenging curriculum. Critics, however, mindful of the idea of the bell curve, contended that the only way to teach all children the same thing was not to teach any of them very much. They thus saw OBE as a disaster in the making for able students. If your goal is to have all students slam-dunk a basketball, went the argument, you would have to lower the basket.

Subject-Matter Standards

Those twin critiques derailed the OBE movement, but the desire for higher standards was left intact. Various academic institutions and professional groups, following the lead of the National Council of Teachers of Mathematics (NCTM), promulgated content standards. Some, as with the NCTM mathematics standards and the science standards developed by the National

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Academy of Sciences, were generally met with wide acceptance. Many critics derided other standards, though—such as language arts and history standards—as being meaningless or merely politically correct. Board members might want to review these standards and the various comments expressed about them.

Whatever the reactions to standards emanating from professional organizations, they were mild compared with resistance to the federal government's proposed national standards and a "voluntary" series of national tests. Those proposals ran into the same anti-government buzz saw that OBE had encountered, but resistance now resided, not with the secular and religious Right, but in the statehouses of the nation. In 1996, the governors of the country declared themselves all in favor of standards but did not support a federal effort to develop them.

Although it has been more than 15 years since the Wirtz and Lapointe report, it is still too early to judge the impact of the standards movement. There are, currently, many efforts at the state level to develop both standards and tests. For the reasons discussed below, school board members, in setting their own standards, should recognize that state standards represent an important factor and are presently undergoing changes that will impact local school systems.

New State Standards

In 1989, President George Bush and the nation's 50 governors held an education summit which resulted in the establishment of six (and later eight) national goals in education. Among these goals, those pertaining to student achievement—including the goal of our nation becoming first in the world in mathematics and science by the year 2000—became the most prominent on the list.

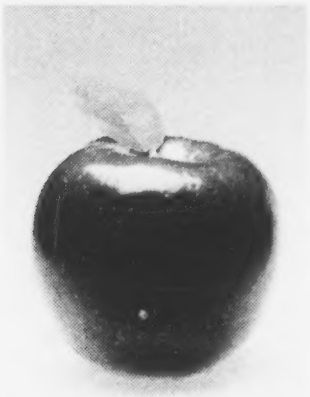
Over the years, the National Education Goals Panel (NEGP) has spearheaded the work of encouraging states to implement high standards. That group, which is closely aligned with the National Governors' Association, includes governors, state legislators, and members of Congress and the executive branch (including the secretary of education).

In 1996, a second summit, made up of business leaders and governors, was convened to identify specific strategies and to introduce newer state leaders to the standards process. From this summit, an entity called "Achieve" was created to provide technical assistance to the states and to help states benchmark their standards and assessments. It is one thing for a state to adopt a set of standards, but how do those standards compare with those of other states?

Within this climate of increasing national (not federal) collaboration, many states have been working to establish higher standards. This effort has received funding through a variety of sources, including the federal Goals 2000 program. The current state-based standards movement is a powerful and interconnecting force that can be expected to influence local school boards' student achievement efforts for some time to come. States are moving rapidly to ensure that school districts meet at least minimum expectations of achievement in reading and mathematics. Thus, school board members are urged to consider the merits and the politics of the standards in their state, as well as those in their own local school systems, and their relationship to student achievement goals. (Appendix A of this primer lists a variety of information sources on standards.)

Part Two:

The Role of the Local School Board



The public expects the nation's schools to provide a learning environment conducive to student achievement at the highest levels. It is the fundamental role of local school boards to provide the leadership necessary to create that learning environment. To provide such leadership, local school boards must first establish student achievement as their highest priority.

Historically, local school boards, as lay governors of the school system, believed that their role was not to substitute their own views on matters of pedagogy for those of professional educators. Rather, they perceived their role to be supportive in nature, approving the budget, placing their stamp on legal documents, dealing with constituents, receiving reports, campaigning for bond issues, and providing "cover" on politically sensitive issues.

Although all of these school board functions are legitimate and should continue, the challenges of raising student achievement in the 21st century suggest a very clear and overarching governance role for local school boards in setting education policy. It is a role that does not cross into the implementation of educational content or pedagogy, but that provides leadership to school systems as they establish and achieve high levels of performance among their students.

While many school districts today are immersed in standard setting, reading-improvement strategies, or other specific components of student achievement, many have not yet addressed the issue in its entirety. The purpose of this section is to help local school boards raise their specific goals and strategies to a new level of thinking by focusing on the "whole" of student achievement for all children.

The Four Pillars of the Local School Board Role

To advance student achievement, local school boards can structure their work into four broad and interrelated categories:

- Vision setting;
- Establishing a successful learning environment;

- Exercising accountability for results; and
- Using advocacy to build support.

Each is a necessary component of successful school board leadership. School boards should review their current activities in each area, consider what more could be done, and evaluate how these four basic functions can be more effectively linked to each other to produce a well-designed action plan.

Vision Setting for Student Achievement

Local school boards should play the central role in driving and guiding the process to establish a vision of education for their school systems.

Local school boards should play the central role in driving and guiding the process to establish a vision of education for their school systems. Indeed, as representatives of the community and governors of the school system, school boards are the best catalysts for stimulating the dialogue, consensus, and actions that can shape a truly dynamic and responsive student achievement plan. Local school boards should play the central role in driving and guiding the process to establish a vision of education for their school systems.

Successful vision setting will involve several steps, such as establishing school district goals, developing indicators of success, and drawing comparisons to the current system. The process also must bring all parties—parents, the business community, the media, and the community at large, together with administrators, teachers (including unions), and the school board—into a common dialogue about the future of their school system.

Establishing a Student Achievement Environment

To be successful, the vision must be supported by an operational plan that:

- Provides the necessary programs and resources;
- Promotes the understanding, commitment, and accountability of all parties; and
- Devotes the time and energy that is needed at all levels within the system.

The superintendent, as chief executive officer of the school district, establishes the operating environment. Compatibility between the superintendent and the district's specific student achievement vision should be at the forefront of his or her hiring and evaluation. At the same time, the school board must provide sufficient resources and flexibility to create an environment which allows the superintendent to focus on bringing the vision to fruition.

Beyond providing the financial resources, the school board must take the lead in creating an environment for student learning in other key ways. It should make student achievement a significant part of its regular meeting agenda, pursue it in board committee work, and advocate it throughout the community. A successful school board must operate as a coherent team, with clear strategies and goals in mind.

Accountability for Student Achievement

In establishing accountability measures, the school board and staff must determine the way success and failure will be assessed, the content and timing of reports, the system of rewards and

consequences, and the method for reporting goals, results, and other information to individual parents and to the public at large.

Most important, the school system must hold itself accountable for the implementation of the student achievement plan and, ultimately, for student success. An accountability process must detail the contributions expected of the superintendent, teachers, principals, and the board itself. It should also ensure that the vision, plan, and specific expectations for student achievement are communicated to staff members as early as possible and made a part of their own formal evaluation process.

Finally, a student achievement plan must also hold students accountable for their own performance. Students must know how good is good enough, how success will be measured, and what positive and negative consequences (such as special recognition for excellence or limits on participation in extracurricular activities for failure) the school system has in place. The responsibilities of parents as partners in the educational process also need to be constructively and informatively communicated.

Advocacy for Student Achievement

Meeting student achievement goals will require the understanding, involvement, and support of the local community and of state and federal policymakers. The local school board must be a vocal advocate for its student achievement vision to each of these audiences.

Because more than 70 percent of households do not have children in public school, the school district needs to communicate its vision and student achievement goals very clearly to taxpayers and the community as a whole to ensure their support. Without this information, the public's perspective and support can be skewed by the anecdotes and advocacy of others who themselves may not have the entire picture. By contrast, comprehensive information from the school district is likely both to increase support for school budgets and to improve the chances of attracting the involvement of businesses and others in school activities.

Because more than 70 percent of households do not have children in public school, the school district needs to communicate its vision and student achievement goals very clearly to taxpayers and the community as a whole to ensure their support.

State and federal lawmakers and other policymakers also need to know the school district's goals and how they can help support them. State legislators, state board of education members, the state superintendent, and the governor, as well as members of the U.S. Congress, have the power to shape the direction of school systems. Therefore, these policymakers should be encouraged to focus their energy on supporting the school system's vision and plan rather than working at cross purposes to it or in ignorance of it.

The Power of the Question

Focusing the school system on student achievement issues and strategies is one of the most important functions of a local school board, and board members often can accomplish this task simply by asking the right questions. The following sections suggest several questions school boards can pose to the superintendent and staff in such key areas as standard setting, testing, and resource alignment.

Setting High Standards: Measuring Academic Results

As previously noted, content standards identify what children need to know and do, and performance standards identify the level of proficiency that students are expected to reach. Virtually all states set these standards for school systems and use a variety of mechanisms to obtain compliance, including mandating standardized testing and requiring students to take certain courses to earn a diploma. While local school districts must adhere to minimum state standards, they are not precluded from requiring students to perform at even higher levels than those set by the state.

It is important that parents, the school board, and staff, at appropriate levels, know what the standards are and what the tests measure. The school district should ensure that tests accurately measure standards in order to avoid expensive and potentially disruptive program changes based on invalid test results. Here are some questions local school boards should ask about standards and tests:

1. Do we want the state's standards to be the "all" or the "core" of our school system's standards? How much better do we want our students to perform than the state requires? What else do we want them to know and do?

2. How well do our teachers know our school district's standards and the level of instruction that is needed to reach them? How clearly are standards being communicated to parents and the community? Do parents know ways they can help their child reach the standards?

3. Which tests do we use to measure student achievement? What are they designed to tell us? Can the results be misinterpreted and, if so, how?

4. Do the tests we use emphasize skills in memorization, analysis, application, communication, etc., in a balance that reflects the school district's concept of student achievement?

5. In addition to any state test that is required, are there any other tests that we want to use?

6. How vigorous are the tests and standards that we use? For example, while our students may perform well on the state's test for language skills, do we know how well the state as a whole performs on a national test such as the National Assessment of Educational Progress (NAEP)? If the children of our state perform significantly better on the state test than on NAEP, do we need to re-examine our state test and standards?

7. How does our school district want to benchmark test results? For example, do we want to compare ourselves with the state as a whole, with neighboring school districts, with school districts that resemble our demographic and socioeconomic profile, with our performance in previous years, with our vision or goals, or with the percentage of our students that move up or down from one category of proficiency to another in a given year?

8. What performance standards and expectations do we set for children with special needs? Do we provide special support so that they can maximize their level of performance?

9. What kinds of rewards and remedies are there for students and staff for exceptionally good or bad results?

10. How well do parents and community members understand test results? Are specific areas of a student's strengths and weaknesses clearly identified and defined?

Other Indicators of Student Achievement

In addition to performance on standardized tests, are there other indicators of student achievement that our school district should use? If we use other indicators, how do we determine whether our efforts are successful? To a great extent, the selection of these indicators will define the character and values that distinguish local communities from each other and are at the heart of local governance of the schools.

The following questions (along with the detailed outline provided in Part Four) demonstrate the broad range of indicators by which school districts can measure goals and success beyond performance on standardized academic tests:

1. What percentage of our students graduate? What percentage graduate with the state's highest academic diploma?

2. What percentage of our students plan to enroll in two-year and four-year colleges immediately after graduation?

3. What does the business community think of the competency of our recent graduates? How can we find out if we don't know?

4. What percentage of our students take Advanced Placement courses? What percentage take three or four years of mathematics and science (rather than business mathematics and general science)? What percentage take three or more years of foreign language?

5. Are greater numbers of women, minorities, or other subgroups who have been historically underrepresented in higher-level mathematics and science courses now taking these courses?

6. What percentage of our students are engaged in positive (e.g., volunteer) activities in the community?

7. Have we adequately reduced violence and drug abuse?

8. Finally, are our students prepared to meet the challenges of the 21st century—not just in an academic sense, but also in terms of the technological, organizational, and sociocultural demands of the next century?

Resource Alignment for Student Achievement

As previously discussed, tests must accurately reflect the standards that are set, or a school system will not know how well its students are meeting those standards and will not have a valid basis for making program changes.

But even when standards and tests are properly aligned with each other, the system's resources and programs must also be adequately designed to support the standards. Not even top school districts are likely to meet all the tested standards if their programs highlight skills and knowledge which differ significantly from those that the standards emphasize.

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Resource alignment issues such as these are addressed in the following broad questions and in the ensuing discussion, which examines the specific areas of teacher qualifications, curriculum development, and textbook selection:

1. Does our school district have the range of programs in place and the quality of programming needed to reach our student achievement goals? (Students cannot take Advanced Placement courses, for example, if they are not offered.)

2. Do we have the quality and adequacy of special support programs (teen pregnancy prevention programs, for example) needed to help students stay in school?

3. Does our school district have current information about innovations and best practices across the state or country in such areas as whole-school reform or the use of technology in raising student achievement?

4. If a particular school is not adequately meeting our school system's standards, what do we do about it? Are there any formal processes in place to help that school improve?

5. Do we set high expectations for all children? In supporting children to reach those expectations, do we accommodate different learning needs, as well as the special needs of individual students and our culturally diverse student body?

Aligning Teachers with High Standards

The quality of the teaching force is at the core of student achievement. In a paper prepared for the National Goals Panel, "Teaching For High Standards: What Policy Makers Need To Know And Be Able To Do," Columbia University education professor Linda Darling-Hammond reviewed a number of studies which suggest that teacher qualifications (as measured by education, experience, and licensing exam scores) exert an important influence on student achievement. However, several of these studies employed data aggregated to the district level, making it difficult to establish the precise relationship between teacher expertise and achievement at the individual level.

More than half of high school students taking physical science are taught by out-of-field teachers (56 percent), as are nearly two-fifths of those taking life science (39 percent), and roughly a quarter of those taking mathematics (27 percent).

Darling-Hammond also cites data from 1990-91 to demonstrate that too many new teachers are hired with emergency licenses (25 percent), and, especially at the high school level, too many do not even have a college minor in their field of instruction (23 percent). More than half of high school students taking physical science are taught by out-of-field teachers (56 percent), as are nearly two-fifths of those taking life science (39 percent), and roughly a quarter of those taking mathematics (27 percent). Further, the least qualified teachers tend to teach in schools with the highest poverty/minority enrollments. She also raises concerns over the adequacy of schools of education in preparing new teachers and the professional development opportunities available to current teachers.

While these broad observations will apply to school districts differently, they provide a useful context for asking the questions set forth below:

1. By subject area and grade level, what percentage of our teachers are qualified (through certification, license, or college major) to teach in their field of instruction? What is the variation in this percentage by school building, and why? What percentage of our new teachers hold substandard or provisional licenses?

2. Do our teachers possess a variety of effective pedagogical skills in their subject area so that they have the skills to accommodate different student learning needs?

3. How do our teachers' qualifications compare with those of teachers in similar local school systems or in school systems that we would like to emulate?

4. Do we assign our new teachers or our best teachers to the most challenging students and to the most challenging schools?

5. How closely are professional development opportunities and compensation rewards tied to the teacher's subject area?

6. Do teachers know the standards expected in our local school system?

7. Can teachers access the information they need? Do they know how to use new technologies in an educationally effective manner?

8. To raise the quality of teaching in our school system, what actions do the school system and the school board need to take? How long will these actions take? How much will they cost? How will our collective bargaining contract have to change?

9. Beyond workshops, what kind of professional development opportunities are available to our teachers (e.g., professional networks, mentoring programs, in-school group activities)? Do we have adequate resources for professional development? Do professional development activities focus on alignment issues and best practices?

10. Do our teachers have adequate time and resources to design curriculum and plan lessons?

11. What mechanisms, such as classroom observation, do we have to determine whether teachers are teaching to the standard that is held for students? (That standard might include teaching broader concepts, such as real-world applications in mathematics and science.)

Aligning Curriculum with High Standards

Aligning curriculum with the school district's academic standards and other indicators of success is critical to attain the system's vision for student achievement. School boards can ask a variety of questions to ensure that the school system's curriculum and curriculum development are effective:

1. Has our school district adjusted its curriculum to reflect new state standards, as well as the school system's own standards?

2. Are there areas in which state standards are impinging upon our local flexibility to determine curriculum?

3. Do our school district and the state have adequate numbers of competent personnel to assist local curriculum development?

4. What support systems exist to align classroom teaching and curriculum with curriculum frameworks? Do our teachers have access to subject knowledge and models for effective teaching?

5. Do we know what our teachers need to know to teach to standards? How well are states and state universities preparing new teachers for changes in school curriculum?

Aligning Textbooks with High Standards

Textbooks and other instructional materials should be the "meat and potatoes" for bringing standards into the classroom. Yet textbooks in many subject areas often are not substantive, do not explain their subjects thoroughly, and frequently do not articulate well with related subjects and other grade levels of instruction.

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Many observers have offered numerous criticisms of textbooks, particularly those in mathematics and science. In a paper prepared for the National Education Goals Panel, George D. Nelson of the American Association for the Advancement of Science contends that science and mathematics textbooks (and curriculum generally) are a "mile wide and an inch deep," do not adequately treat specific subject matter, and too frequently emphasize memorization over understanding.

Other observers, such as education writer Harriet Tyson, also raise the concern that publishers "dumbed down" their texts and went overboard covering too broad a range of subject matter in order to be "marketable" to as diverse a range of school districts as possible. Certain textbooks may be selected without adequate review or because they come with a teacher instructional guide, even though other, higher quality textbooks, may be available. These observations may not apply equally to all school systems, but they do suggest a series of questions that can help determine whether or not textbooks and the selection process support increased student achievement:

1. Are our school district's textbooks aligned with the subject matter and the level of perforance that we want our children to achieve?

2. Do our textbooks provide appropriate treatment of specific subject matter to promote student understanding and acquisition of knowledge? Do they incorporate and expedite best practices?

3. What is the formal process for textbook selection in our school district?

4. Do the persons responsible for textbook selection have adequate training and time to do the job?

5. To what extent are better textbooks rejected because of the attraction of bonuses (such as videos and instructional guides) that accompany the sale of other textbooks?

6. What external sources do we use to help review textbooks? Do these external reviews evaluate a textbook based on the quality of content? Or, are these reviews based on such factors as the number of times a subject is mentioned (regardless of context or the meaning

conveyed) in order to demonstrate that the text is covering terms used in the state's standards and curriculum frameworks?

The Mega Questions

Through the "Power of the Question," local school boards can learn the key issues to raise and can provide the leadership necessary to elevate student achievement.

Now, with these substantive questions in mind, there are a few broader questions that can provide a context for evaluating a school system's student achievement effort and help each board initiate a plan of action:

1. How does our school system define student achievement?

2. Does our school system have a vision and a plan for raising the achievement of all children?

3. Are our student achievement goals, plans, and progress reports set forth in clear and quantifiable terms and broadly disseminated within the school system to parents and to the general public?

4. Are our teachers, administrators, and other staff committed to, and held accountable for, achieving the goals and standards of our school system?

5. How do we involve parents, the business community, and other members of the public in the development and implementation of, and the accountability for, our student achievement goals?

6. What next steps can our school board take to lead the effort to raise student achievement in our school system?

7. Finally, are our students prepared to meet the challenges of the 21st century—not just in an academic sense, but also in terms of the technological, organizational, and sociocultural demands of the next century?

Public Engagement and Community Outreach

It is at the community level that the American public can have the greatest impact on education. And it is at their own community level where citizens most want the schools to succeed. To that end, local businesses frequently support schools by contributing equipment and supplies and by offering work-study or other incentive programs to keep students in school. Civic and religious groups also work with schools to help develop character, provide support programs, and create positive influences that undergird the education of the whole child. Similarly, news media that understand the vision and direction of the school system can play a very important role in building and attracting community support. Most important, many school boards recognize the vital role parents play in the education of their children and have encouraged them to take an active part in schools and in developing learning partnerships.

It is at the community level that the American public can have the greatest impact on education. And it is at their own community level where citizens most want the schools to succeed.

At its most basic level, public engagement can mean a project to inform the public about the school system or a public relations effort to create a positive climate for school initiatives. It also may involve dialogue among diverse community groups to listen to the public's perception of the school system and its goals for the future. But taken to its fullest, public engagement means convening the community for the purpose of developing a common vision from which the school system can develop a student achievement plan—and gain community support for its implementation.

Public engagement can be built around a single issue. Ultimately, however, public engagement should be built around the school system's entire student achievement program for all students. (One good example of this more comprehensive approach is the Cincinnati Public Schools' Strategic Plan, described on NSBA's Web site, www.nsba.org.)

To be effective, the school board should build its public engagement program with the four pillars of the school board role in mind (vision setting, the provision of a high-quality learning environment, proper accountability, and community advocacy). The board needs to plan the various steps carefully, because process is vitally important in getting results. Before engaging the community, school system representatives at all levels (the school board, administrators, and teachers) should understand the process and develop a consensus about the most effective approach. For example, the use of small focus groups may be a better way to begin engaging the public than a mass meeting, where people may not fully understand what is expected of them.

Taking the steps out of sequence may hinder results. For example, simply calling the community into an initial vision-setting meeting may result in a low turnout or a meeting which draws only well-known activists but no new blood or broadened community perspective. If school system representatives outnumber the community, they may inhibit dialogue or turn the meeting into a "school system tells all" event. They may spend too much time and use too much jargon defending the current system rather than listening.

Boards may want to consider using an experienced outside facilitator to develop and manage their public engagement process. The state school boards association may have a public engagement service and should be a good source of ideas.

To help evaluate their current public engagement activities, local school boards can ask the following questions:

1. Is the community involved in telling us its viewpoint about our school system, its needs, and expectations? Does the process really involve communication with a broad range of constituents?

2. Is the community involved in establishing the vision and goals for the school district?

3. Is the community informed of the system's vision, success, failures, and plans for improvement?

4. Do our staff and community understand the vision and goals of the school system?

5. Do we report test results and other information relating to our indicators of success to parents, the business community, the media, etc.? Do our reports promote understanding, or do they lead to inaccurate conclusions? How do we know?

6. When we report to the public, do we present our goals and results in clear quantifiable terms (e.g., in three years we want 95 percent of our fifth-grade students to meet state standards for reading)?

7. What efforts do we make to actively communicate with special groups and target audiences to address the six engagement activities outlined above?

School board engagement also means involvement at the state level and with other entities that influence or can be a resource in raising local student achievement. Local school boards may want to ask several questions to determine whether the school system is "ahead of the curve" in developing student achievement policies and innovations that incorporate and support best practices:

1. To what extent is our school system initiating or responding to proposals at the state level to change standards or assessments, textbook selection, course requirements, or professional qualifications? Do we want to?

2. What kinds of state technical assistance or grant opportunities are available to help support our student achievement plan?

3. To what extent do we use the standards set by national professional associations (e.g., the National Council of Teachers of Mathematics)? Do we want to?

4. Does our school district have adequate outreach to various governmental and quasi-governmental agencies, as well as to education associations, to keep abreast of current developments, trends, and practices in student achievement?

5. Do our school board members and staff have adequate opportunities to sharpen their student achievement strategies through conferences and publications?

Creating and implementing a plan based on community involvement are important elements in defining a vision and establishing a climate that is conducive to learning. By asking the right questions, such as those that have been presented here, school boards can keep their districts constantly focused on the student achievement agenda.

Cherry Creek: Public Engagement in Support of Academic Excellence

The Cherry Creek (Colorado) School District found a way to engage the entire community in its quest to maintain academic excellence in the face of rapid growth and substantial budget cuts. Through an extensive process that took several years, the district built community support for its mission of inspiring every student "to think, to learn, to achieve, to care."

In 1993, the school board and administration convened an Education Summit to define and build a consensus for its vision of schooling. Faced with more than $34 million in budget cuts over a five-year period, the school district brought together 500 educators, citizens, parents, students, business leaders, and politicians from the Metropolitan Denver area to devise a funding system based on academic priorities. At issue: What really matters in public education?

Meeting in small groups over several weeks, summit participants debated what programs were of chief importance. During the next year, hundreds more people joined in the summit process, which ultimately produced a series of recommendations. After debating the summit's recommendations for several months, the school board created a "tier" system of priorities, assigning priority to programs based on the extent to which they supported the district's principal goals.

As it worked on balancing its 1995-1996 budget, the board kept in mind the community's desire to support academic programs and to reduce or eliminate programs in the lower tiers. It made cuts in transportation and some support areas and, rather than eliminate athletics, it established fees to generate additional revenues for sports programs.

In fall 1996, the school board wanted to do still more to maintain the high level of educational achievement in this district—the third largest in Colorado—as it grew by more than 1,000 students a year and served an increasingly diverse and needy student body. Expanding on the work of the Education Summit, the district asked a task force—a diversified group of board members, parents, teachers, administrators, and business leaders—to engage "in search of excellence." The task force visited and gathered information from several large school districts around the country rated among the top 10 nationwide for academic performance.

The task force then presented its findings at a series of community forums and shared them with staff at each school. Several months later, it presented its preliminary recommendations, shaped by community responses, to the school board. The district then used a series of electronic forums and an automated telephone survey to further assess the community's perceptions of and reactions to the recommendations.

Finally, the school board unanimously adopted a final set of recommendations aimed at increasing achievement for all students. The recommendations centered on decreasing class size, increasing the number of students who take the district's core academic subjects, providing more Advanced Placement courses, reserving additional teaching slots for high-poverty schools, and taking other measures to support high expectations and achievement.

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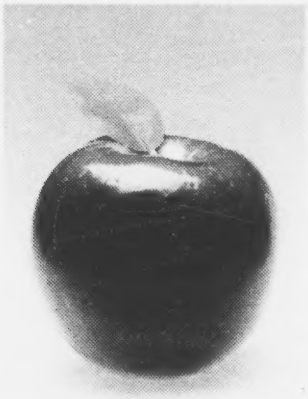
Part Three:

A Guide To Testing



School is concerned with a number of outcomes, of which student achievement is only one, albeit a crucial one. Schools must also concern themselves with preparing students to participate in the civic life of a democracy and with inculcating habits of lifelong learning. Still, for many school districts, student achievement, as measured by standardized tests, represents the bottom line. Test scores can drive public support, affect the tenure of the school board and superintendent, influence private school enrollments, and, of course, affect day-to-day classroom programs and activities.

Because tests play such a significant policy role in the decisions that local school boards make, they (and the public) must understand what each test does, how well it does it, and what test scores reveal about student achievement.

Measuring Academic Achievement: Test Scores

Understanding what test scores reveal is not always a simple or straightforward matter. This section will help school boards understand what tests measure, the societal and familial contexts which can influence variations in test scores, how to compare student performance, issues concerning the statistical significance of test results, and the importance of focusing on educational productivity. With this information, school boards will be better equipped to make sound judgments regarding the selection and use of tests in their particular school district.

What Tests Measure

With hundreds of school tests available, it is obvious that not every test measures the same content or skills. If a test is to be used to evaluate what students have learned, it is important that there be a good match between what the test measures and the objectives of the school, program, reform, or innovations.

The point bears repeating: Before using a test to hold a program, school, or school system accountable, school boards must make certain that the content of the test is relevant to the goals of the school.

For instance, in the era following the 1957 launch of the Soviet satellite Sputnik, many mathematics textbooks presented math instruction through set theory. The tests given in the late 1960s, which contained questions based on that theory, used terms such as associativity, transitivity, null set, and empty set. If today's students took those tests, they would likely do very poorly. Yet, their poor performance would not reflect their knowledge of mathematics. Rather, it would reflect the fact the contemporary students have not learned the vocabulary associated with set theory and have not learned math in the way those particular tests expected them to learn.

The point bears repeating: Before using a test to hold a program, school, or school system accountable, school boards must make certain that the content of the test is relevant to the goals of the school. They must ensure that the program, reform, or innovation could be expected to improve scores on that test—particularly if the test is an important element in a broader plan to assess student achievement.

Nationally used commercial achievement tests are designed to be sold in large markets and so are not tailored to particular state curricula. Similarly, state tests may not reveal how well students learned local "add-ons" to the curriculum. Other factors, such as student motivation to prepare and work hard on the exam, may influence test results. Did students have a stake in doing well?

While achievement tests are geared to specifics, other tests, such as the SAT I (hereafter simply called the SAT) attempt to measure more "global" cognitive development. For example, SAT tests may predict how well a student will do in the first year of college but do not adequately measure achievement on subject matter that is taught in high school. While some SAT questions (about algebra and geometry, for example) clearly relate to instruction, other questions (e.g., analogies) do not. Very little if any instruction in school asks students to complete an analogy. However, because many consider analogical reasoning to be important to success in college, one part of the SAT verbal section includes questions of this type. Conversely, questions on history, geography, chemistry, and other subjects do not even appear on the exam.

The Social/Family Context

The familial and community factors in a child's life affect cognitive development at least as much as do schools

While life in school is typically more focused on academics than life outside of school, children do not spend nearly as much of their lives in school buildings as elsewhere. Not suprisingly, the familial and community factors in a child's life affect cognitive development at least as much as do schools. In an analysis of data aggregated to the district level, one researcher found that out-of-school factors (i.e., parental education and other background variables) accounted for fully half of the total variation in mean student achievement.

In some states, however, students may perform better on national assessments than their family and demographic characteristics would predict. In Texas, for example, 44 percent of fourth-graders in disadvantaged urban schools performed at or above the "basic" level in the 1992 NAEP math assessment, compared with only 27 percent in California. Hispanic fourth-graders also fared better in Texas than in California—45 percent of Hispanic fourth-graders in Texas read at or above the "basic" level, compared with only 28 percent in California. These data should be viewed cautiously, however, because analyses of NAEP data below the state level involve high standard errors, making conclusions suggestive at best.

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Observers say one factor in Texas' greater apparent success may be that state's investment in reducing class size in the early grades. Thus, out-of-school contextual factors should not be an excuse for low test scores. Board members should not find themselves saying, "We're doing well, given the kinds of students we have." They should, rather, take these contextual variables as a challenge and endeavor to implement strategies that successfully address the many factors that impact upon achievement. (Appendix B offers a more extensive discussion of social and family factors.)

Comparing Student Performance

In order to compare the quality or effectiveness of schools, programs, or educational reforms, studies must employ comparable samples of students. Test score comparisons are inappropriate when the samples of students taking the tests differ significantly. Unfortunately, this lack of comparability—which may result from sampling error, selection bias, or other causes—occurs often enough to illustrate with a few examples.

Studies that compare how students in various countries perform on mathematics and science tests are popular today, although, historically, these international comparisons have been fraught with interpretative difficulties. For example, in the Second International Mathematics Study (SIMS) in 1987, SIMS officials refused to recognize Japanese trade schools as "schools" for the purposes of the study, even though they enrolled some 30 percent of all Japanese secondary students (none of whom were bound for Japanese colleges or universities). Omission of these potential test takers likely biased the sample strongly in Japan's favor. Similarly, at the twelfth grade, SIMS tested only those students still enrolled in mathematics courses. That decision meant that only two percent of Hong Kong's twelfth graders were tested, along with 15 percent of their American and 100 percent of their Hungarian counterparts. The fact that school enrollment figures differed dramatically across participating countries further complicated the study. Only 50 percent of age-eligible Hungarian students and 17 percent of New Zealanders were even in school, compared with 87 percent of Americans.

In contrast with earlier international comparisons, the Third International Mathematics and Science Study (TIMSS) is the most fair and accurate international comparison ever undertaken.

In contrast with earlier international comparisons, the Third International Mathematics and Science Study (TIMSS) is the most fair and accurate international comparison ever undertaken. Strict quality controls ensured that the sample of students taking the mathematics and science general knowledge assessments were representative of the entire population at the end of secondary school. For example, in most countries with distinct education "streams"—such as academic and vocational—students in all programs were represented in the TIMSS sample. Thus, the TIMSS represents a major improvement over previous international studies of student achievement by meticulously avoiding many of the pitfalls of sampling error and selection bias which characterized these earlier studies. (Note: Some selection difficulties remain at the twelfth-grade level for the TIMSS advanced mathematics tests.)

Sampling error and selection bias also can influence certain state-by-state comparisons. Only a portion of the students in each of the 50 states take the SAT exam, and that percentage can vary widely from one state to another. Several state-level studies have examined the effect of participation rates on SAT scores. A recent study found that some 83 percent of the variability among states could be attributed to differential participation rates (Powell and Steelman, 1996). Similarly, an examination of SAT scores across time can be useful in looking at the performance of a school district, but care must be taken to factor in any demographic changes that might

affect scores. For example, if a school district increases its proportionate enrollment of at-risk students taking the SAT, a drop in scores may be more a reflection of socioeconomic factors than a decline in student achievement. While this is true, in setting achievement goals, socioeconomic factors should not be seen as an excuse for low performance.

Finally, rapid changes in demographics, which affect test scores independently of any change in the quality of schools often make trend comparisons difficult. In a school district like Fairfax County, Virginia, which has gone from being almost all white and English-speaking to being 34 percent minority and having students who speak more than 100 languages, test score changes over time are difficult to interpret. As subsequent discussion will illustrate, testing programs that measure achievement for the same students at two or more points in time avoid this problem (see "Assessing Educational Productivity," below).

Statistical Significance

Policymakers, administrators, and other stakeholders in the educational process often point to results that are "significant" without specifying what the word "significant" means. Does it refer to the results of a statistical test or imply important practical consequences? Results that are statistically significant might or might not have practical implications. To understand this difference, we need to know the meaning of "statistical significance."

Researchers use tests of statistical significance to decide whether or not their results reflect likely differences, or whether they might well have happened by chance. For example, a reading test might be administered to two groups of students, one of which has received reading instruction by phonics, the other using the whole language approach. Let us say the two groups have average scores that differ by some amount labeled as "D." A test of statistical significance explains how likely it is that one would find a difference as large as "D" if the two groups really did not differ—as the statisticians say, if the two groups came from populations with the same mean. Statistical significance is, therefore, a statement of probability—it tells only how likely it is that the results occurred by chance. It does not reveal anything about the substantive significance of the observed differences, which, ultimately, is a matter of judgment. In terms of the foregoing hypothetical example, the difference in reading test scores between students receiving instruction by phonics and the whole language approach might be statistically significant, yet too small to be of any substantive significance and, thus, of little interest to school board members and other decision makers. Finally, it is important to note that tests of statistical significance are dependent upon sample size. The same "D" that is statistically significant in one study may not be statistically significant in another with fewer subjects.

Statistical significance is . . . a statement of probability—it tells only how likely it is that the results occurred by chance. It does not reveal anything about the substantive significance of the observed differences, which, ultimately, is a matter of judgment.

Understanding the concept of statistical significance is useful in interpreting test score results and in making comparisons among test takers. To cite just one example, the headline over one story which recently appeared in a major education journal read: "Good News: Our 9-Year-Olds Read Well; Bad News: Our 14-Year-Olds Don't." The good news was that in an international comparison of reading skills, American nine-year-olds had finished second among 27 nations. The "bad" news was that, among the 31 countries testing 14-year-olds, the United States had finished 8th. However, a statistical analysis conducted by the National Center for Education Statistics at the U. S. Department of Education found that, of the seven countries ahead of the United States on the 14-year-old test, only one was ahead by a statistically significant margin. At the same time, because results from the top 16 countries were very close, one had to go all the way from the 8th-

ranked U.S. to the 16th-ranked nation to find a country performing significantly below the U.S. Even then, one may still pose the question: Are such differences in rank *substantively* significant?

Assessing Educational Productivity

Assessing the productivity of our nation's schools is a complicated matter, not widely understood by board members, school administrators, teachers, or the public at large. Yet, as the principal intermediaries between schools and the community, school board members must come to terms with some of the fundamental issues concerning productivity assessment. Just as no industry in the private sector could operate successfully without meaningful productivity data, those charged with responsibility for our nation's schools require reliable and valid data to guide their decision making.

It is not enough simply to be conversant with the conclusions of the latest evaluation or accountability study—board members also must begin to learn how to evaluate studies for their underlying methodological rigor and to weigh research conclusions based on that new knowledge.

Ideally, the measurement of productivity in education should include: (1) measuring both inputs and outputs; (2) establishing linkages between specific inputs and outputs (i.e., holding constant other, competing inputs); and (3) evaluating only what a particular production unit (e.g., school, classroom, etc.) adds to the product—in other words, assessing what economists refer to as "value added."

- **Inputs and Outputs** — Inputs to the educational process may include such factors as curriculum, instructional approach, and teacher quality, as well as a variety of social and family context variables beyond the control of schools. Outputs generally include various factors associated with the cognitive, emotional, and social development of children. In the present context, a single output—student achievement—is of most concern.

- **Establishing Linkages** — Establishing clear linkages between specific educational inputs and student achievement requires a basic understanding of certain key issues concerning testing and research design. Inputs such as teacher quality or the number of computers in a school are typically confounded with other "non-programmatic" inputs, such as the social background of students. Thus, to make meaningful test score comparisons, one must separate out the influence of those variables that are beyond the control of the school. One way to accomplish this is to collect information on family/social background at the time tests are administered and to use these data to statistically control for the effects of such extraneous variables when test results are analyzed. Another approach, which may be especially useful in evaluating the efficacy of new curricula or other programmatic reforms, involves the use of random assignment to individual classrooms. Although difficult to implement, when students are randomly assigned to classrooms, the influence of family and social background variables is effectively removed. This approach was recently employed to provide the first clear evidence that smaller class size is linked to student achievement (Mosteller, 1995).

- **Assessing "Value Added"** — In interpreting test scores, it is also important that board members and other stakeholders in the educational process begin to focus their attention on the "value added" by specific inputs. To evaluate value added, tests must capture how much achievement changes over time in response to specific interventions. By administering tests to the same students at two or more points in time, districts can assess net gains associated with the educational process. Unfortunately, local school districts have been slow to implement such "before and after" testing programs, and those that have typically fail to use the resulting data to maximum advantage.

School board members' understanding of these fundamental issues concerning the measurement of productivity in education is critical to the successful fulfillment of their mission. To make informed policy decisions, school board members of the 21st century must become increasingly sophisticated consumers of testing and evaluation data. It is not enough simply to be conversant with the conclusions of the latest evaluation or accountability study—board members also must begin to learn how to evaluate studies for their underlying methodological rigor and to weigh research conclusions based on that new knowledge.

Types of Tests

Having given some general considerations to tests and their interpretations, this next section describes various kinds of tests which school districts commonly use. They include:

- Norm-referenced tests;
- Criterion-referenced tests;
- Performance tests; and
- International tests.

Norm-referenced Tests

With the exception of those tests constructed by teachers themselves, commercially developed, norm-referenced achievement tests are the most common form of educational achievement tests used in schools.

With the exception of those tests constructed by teachers themselves, commercially developed, norm-referenced achievement tests are the most common form of educational achievement tests used in schools. The tests most commonly used include: the Iowa Tests of Basic Skills, the Stanford Achievement Test, the Metropolitan Achievement Test, the Comprehensive Tests of Basic Skills, and the California Achievement Test.

Norm-referenced tests compare individual student performance with the performance of others (usually a national sample) in the same grade. To develop such a test, the test publisher asks experts in curriculum areas to review the most common materials and textbooks used in classrooms and to develop questions which reflect the content of those materials. These questions are then administered to a representative sample of as many as 200,000 students across the nation. The national norm of a test is the score that falls at the middle—or 50th percentile—of the entire range of scores in the norming sample. Half of all scores are below this norm and half are above it. It is worth emphasizing that this method of defining the norm ensures that half of all students are always "below average"—for some, this represents a disquieting consequence of norm-referenced testing.

Norm-referenced test scores also can be reported in terms of "grade level." In this instance, grade level is defined as the score at the 50th percentile for a particular grade. Again, by definition, half of the nation's students are always "below grade level." This method sometimes leads to confusion and occasionally misleading stories in the media. For instance, a newspaper might publish a story cautioning the public that 25 percent of students promoted from the eighth to the ninth grade were below grade level. Of course, even a relatively high-performing district would expect to have a substantial percentage of its students performing "below" grade level, when it is defined in this manner. Grade level, as used by test producers, says little or nothing about a student's readiness for the work at the next grade.

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For many years, it was impossible to track trends, up or down, on most commercially developed norm-referenced achievement tests. After a test had been on the market a few years, its publishers would revise and "renorm" the test, since curriculum changes and growing familiarity with the test might cause changes in performance not reflective of changes in actual achievement. The publishers would administer the test to another national norming sample, and whatever raw score corresponded to the 50th percentile would become the new "national norm." This score might or might not be the same score established by the administration of the earlier version of the test. (See the more detailed discussion concerning renorming the SAT, below.) Thus, the "norm" in a norm-referenced test is often a floating standard—it is subject to change each time the test is renormed. As a result, renorming can have the effect of obscuring gains or losses in achievement.

The Iowa Tests of Basic Skills (grades 3-8) and the Iowa Tests of Educational Development (grades 9-12) represent two important exceptions to this rule. By long-standing state law, each new form of these tests must be equated, statistically, to the previous form. It is, therefore, possible to compare scores on the Iowas (as they are jointly called) from 1955 to the present. These trends show scores rising from 1955 to about 1965, falling from 1965 to about 1975, then reversing direction, attaining all-time highs for most grades around 1988.

These year-by-year results are available only for students enrolled in schools in the state of Iowa. However, the results of national norming samples, conducted about every five years, show that national trends mirror the Iowa results very closely, reaching all-time highs in the late 1980s and remaining flat since that time. For the last two years, scores in Iowa have declined somewhat, but no national norming sample is yet available to determine if a similar decline has occurred across the nation.

Criterion-referenced Tests

Criterion-referenced tests measure a person's performance against a well-specified set of standards. Such specification is easy to accomplish in, say, ice skating, but very difficult in relation to curricular domains which often are only vaguely specified. For that reason, the enthusiasm that greeted the concept of criterion-referenced testing seems to have abated somewhat. Nonetheless, people still refer to some tests as "criterion-referenced." The term is typically used to refer to a test which comes with a "cut score"—a score students must attain in order to pass the test.

Criterion-referenced tests have one important advantage over norm-referenced tests—they can more readily be developed to evaluate programs, reforms, and innovations.

The "minimum competency" tests employed by some 35 states during the 1970s were of this type. Although these tests were usually referred to as criterion-referenced tests, the "criterion" was simply getting some percentage of the items correct. If the cut score was set at 70 and the test was 100 items long, a student could pass by missing the first 29 questions and getting the next 71 correct, or by answering the first 71 correctly and missing the last 29. A more refined approach to criterion-referenced testing would take these differences into account.

Criterion-referenced tests have one important advantage over norm-referenced tests—they can more readily be developed to evaluate programs, reforms, and innovations. Norm-referenced tests come off the shelf and, generally, cannot be tailored to specific programs. Criterion-referenced tests are more likely to be developed as assessment tools for locally-developed programs and innovations. (In terms of content definition, the NAEP—described later in Part Three—represents the only criterion-referenced assessment employed on the national level.)

Performance Tests

Performance tests require students to demonstrate directly what they can do, through writing essays, performing mathematical computations, conducting scientific experiments, or providing portfolios of artistic work. These tests are attempts to provide alternatives to the more common standardized tests. While multiple-choice tests can evaluate a large number of people quickly and inexpensively, they are generally less effective than performance tests in evaluating curriculum areas such as writing. Furthermore, in addition to their role in assessing achievement, performance tests can be useful as devices from which students learn even as they are being tested.

Performance tests are likely to find a niche where they can be used in instructional settings. More than the other types of tests discussed, they offer an opportunity to directly assess competence. Performance tests are frequently used to train airplane pilots, for example. While the public is not necessarily interested in how well a future pilot performs on a multiple-choice test of navigation, it is considerably interested in that pilot's ability to get the airplane up in the air, to the right destination, and down again safely. A performance test, using simulators, assesses those abilities better than a multiple-choice test would.

Performance tests have been less useful as accountability instruments, in part because of the difficulty in obtaining reliable scores, but also because they are costly to implement and consume a good deal of time if given to all students. In one instance where an entire state has adopted a performance assessment, the technology has not yet proven wholly adequate. Vermont adopted the use of portfolios for assessment and, thus far, has had trouble obtaining reliable results when the portfolios are scored by several scorers. In an instructional setting, where several teachers might share with a student their opinions of his or her writing, differing views of quality need not be a problem. For evaluation purposes, however, those varied opinions can make objective assessments about quality difficult to attain—one teacher may evaluate a student's work as excellent, whereas another might conclude that it is adequate, at best.

International Tests

International tests are not a "type" of test but are treated separately because, in some quarters, they have garnered prominence. Many American educators, together with the public and the news media, want to know how well this nation's students are performing in comparison with those of other countries. Each international comparison has become more sophisticated in its methodology, although interpretive problems remain: Can there be truly equivalent test items in so many different languages? Are questions free of cultural influence?

According to results from the Third International Mathematics and Science Study (TIMSS), U.S. students performed relatively well in these subjects at the fourth grade level—above the international average in both math and science and outperformed in science by only one country (see box). U.S. students' relative standing in math and science declined, however, by eighth grade and continued to decline relative to other TIMSS countries in the secondary school years. U.S. twelfth graders outperformed terminal-year secondary school students in only two countries—Cyprus and South Africa.

International Comparisons in Mathematics, Science, and Reading

Subject Area	Grade Level	# of Countries that Outperform the U.S.	# of Countries Not Significantly Different From U.S.	# of Countries That the U.S. Outperforms
Mathematics[1]	4th	7	6	12
	8th	20	13	7
	12th	14	4	2
Science[1]	4th	1	5	19
	8th	9	16	15
	12th	11	7	2
Reading[2]	4th	1	1	24
	9th	1	15	14

[1]TIMSS, 1996 & 1998
[2]IEA International Reading Literacy Study, 1992

The results of an international comparison of reading literacy, conducted by the International Association for the Evaluation of Educational Achievement (IEA) present a somewhat brighter picture. Overall, U.S. fourth- and eighth-grade students were outperformed by only one country (Finland) and, for both grades, both ages in the reading study, the 90th, 95th, and 99th percentiles of American students scored the highest in the world. That is, the best readers in the United States scored higher than the best readers in all other nations, including Finland.

The NAEP and the SAT

Two tests—the National Assessment of Educational Progress (NAEP) and the Scholastic Assessment Test (SAT)—have become nationally prominent in the last 20 years. Because these two tests are often used by the media as indicators of school quality, they are discussed in some depth below.

National Assessment of Educational Progress (NAEP)

About 35 years ago, then-Commissioner of Education Francis Keppel gave his support to an idea advanced by Ralph Tyler to survey the nation's students to determine what they knew and didn't know, much as health agencies surveyed the nation to gauge the prevalence of health problems. Keppel's proposal caused a firestorm of protest much greater than—but very similar in kind to—objections raised more recently to President Clinton's proposal for a national test. Local control of education is endorsed by many today, but it was even more hallowed then. People argued that a national assessment would stifle local innovations and creativity. More important, many in Congress and virtually all educational organizations protested that such a project would lead inexorably to a national curriculum and federal control of education.

As a compromise, NAEP was originally housed in a non-federal organization for state policy, the Education Commission of the States, and forbidden to report any data at a level smaller than "region." It also reported data by gender and ethnicity. In 1988, legislation was passed to permit the reporting of state-level data. Since then, several state-by-state comparisons have

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Because too few students in any single district take the NAEP, it does not provide a reliable measure of achievement below the state level.

been conducted in reading, mathematics, and science, although only about 40 states participate at the state level. NAEP tests a variety of subject areas, with reading and mathematics assessments occurring every two years and science, writing, history, and geography tests occurring less frequently.

Originally, NAEP was designed to reveal what most people know, what some people know, and what few people know. The testing companies were directed to construct some test items that 90 percent of the students would get right, some that 50 percent would get right, and some that only 10 percent would be expected to answer correctly.

Later, a National Assessment Governing Board (NAGB) was organized, whose members wanted NAEP to prescribe what people *ought* to know, not simply what they *do* know. To this end, NAGB constructed "levels" of performance: basic, proficient, and advanced. Many in education believed that the first attempt at setting such levels resulted in impossibly high standards, and many continue to believe that later levels are still unrealistically high. Moreover, several technical studies of the process for setting the NAEP achievement levels found the process flawed.

The nature of the NAEP levels will likely be a continued source of controversy, in part because they present a different picture of the accomplishment of students than some other studies show. For instance, the 1996 NAEP math report shows that only 18 percent of fourth graders were proficient, only two percent were advanced, and 32 percent were below basic. Yet American fourth graders performed well above the average score of the 26 countries participating in TIMSS at the fourth-grade level.

Trend results for the NAEP show a mixed picture. Science scores fell from 1969 to 1982 for 17-year-olds but have recovered most of the loss. Science scores for 9- and 13-year-olds were stable until about 1994, when they began to rise. In mathematics, scores were stable from NAEP's inception until the late 1980s, but have risen now on three consecutive assessments. In reading, scores had inched up since NAEP's inception until the most recent assessment, when the scores of 17-year-olds fell slightly, while those of the other two age groups were stable.

Because too few students in any single district take the NAEP, it does not provide a reliable measure of achievement below the state level. However, while some experts in testing caution against such use, the NAEP has been employed as a means of benchmarking district-level results on other assessments. For example, in interpreting student performance on a state-administered exam, district officials might weigh those results against the state's overall ranking on the NAEP—i.e., high district-level scores on a state-administered exam might be viewed more cautiously if the state's overall performance on the NAEP is low relative to that of other states. Recently, President Clinton has advocated a voluntary national examination that would yield reports at the district, school, and individual level—something that the NAEP, as it is now structured, cannot do.

The Scholastic Assessment Test (SAT)

In 1900, a group of colleges formed the College Entrance Examination Board to try to bring some measure of coherence to what was taught in the nation's high schools. Board members had noticed that similar-looking transcripts often concealed the fact that students had been exposed to very different course content. The board members thought that by administering examinations, they could demonstrate to high schools what they valued and, thus, encourage them to align their curriculum accordingly.

In 1901, the board tested 973 students in nine subjects. The next year it added four subjects and the number of students tested rose to 1,362. Impressed with the military's successes using more general, multiple-choice ability tests in World War I to predict who would be good officers, tank drivers, etc., the board decided to abandon the rather cumbersome process of constructing many subject-area tests. In 1926, it opted in favor of developing a single test of "scholastic aptitude" that would predict who would be successful in college. The resulting test was called the Scholastic Aptitude Test, a name that endured until 1994. Since the inception of the SAT, the test's developer has considered it a "mere supplement" to the rest of a student's high school record and has consistently warned against relying too much on test scores in making college admissions decisions—advice that was largely followed through the late 1970's.

The SAT gained public prominence when the national average SAT score fell for 17 consecutive years from 1963 to 1980. While the committee which the College Board appointed in 1977 to study the decline pronounced the fall a complex matter, the media and the public took it simply as an index of school quality. Each change in SAT scores has been carefully scrutinized ever since. Even though fewer than half of the nation's seniors take the SAT, and virtually all of those are college bound, many people inappropriately view the test as a measure of the health of the nation's schools.

Today, about 1.8 million students take the SAT each year. It is not an achievement test in the usual sense—that is, it is not linked to any particular curriculum—and some of its questions (analogies, for example) call for skills not specifically taught in schools. Thus, for many years, the College Board and the ETS maintained that the SAT was completely impervious to coaching, a claim which facts no longer support (although both institutions still maintain the impact of coaching is small).

The SAT has evolved in several ways since its beginnings. In 1994, the College Board changed the content of the test to bring it more in line with "achievement" and renamed it the Scholastic Assessment Test. Since then, questions have been more closely aligned with high school experience. The math section, for example, replaces five questions in each of its two sections with 10 questions that ask the student to produce a response rather than select one of five multiple choices.

Even though fewer than half of the nation's seniors take the SAT, and virtually all of those are college bound, many people inappropriately view the test as a measure of the health of the nation's schools.

In 1996, the College Board also renormed or "recentered" the SAT to make it more applicable to today's student population. Scores were last centered in 1941, on the eve of World War II. The standard setters of 1941 were 10,654 high school students who predominately resided in the Northeast. Most planned to attend either Ivy League or Seven Sisters colleges or other private institutions. They were 98 percent white and 61 percent male, and fully 41 percent had attended private, college-preparatory high schools. That group's average raw score was assigned the scaled score value of 500—with a scale ranging from 200 to 800 points.

The College Board recognized that the original group members were an elite who did not resemble today's million-plus test takers, who are 29 percent minority, 52 percent female, and 83 percent public school attendees. In 1996, the board reasoned that if the score of 500 is to accurately represent the average score of students applying to college, the scale had to be changed. Prior to renorming, students scoring 450 might come away falsely believing that they were below average among students currently applying to college. The board called this change a "recentering." For school board members interested in making comparisons over time, the Educational Testing Service (ETS), which constructs the SAT for the College Board, will provide a conversion table that permits all scores to be converted into the old scale or the recentered one. In addition to changes over time in the population taking the SAT, selection bias also

makes current year state-to-state comparisons invalid. For example, some of the nation's lowest-achieving states perform quite well on the SAT. However, in many of these states, the American College Testing (ACT) program serves as the principal college entrance examination. In these states, only the best students—as few as 5 percent of seniors—take the SAT, compared with other states where the test is administered to 70 percent or more of seniors.

The SAT does not predict a student's success in college uniformly well. In highly selective colleges, it works better than high school grades. In these colleges, many applicants will have the same grade-point-average—straight A's. Not all of those with straight A's will get the same score on the SAT, so the SAT allows more differentiation. Differentiation is, in turn, critical for prediction. If every student has an A average, no differential predictions can be made. For most other colleges, however, the SAT predicts success in college no better than high school grades and adds very little to the predictions made from grades and rank in class.

Most of the foregoing discussion concerning the SAT also applies to the American College Testing (ACT) program, except that ACT questions are more oriented toward achievement. Those who developed the ACT were more interested in using the test for placement and guidance purposes than were those who developed the SAT.

Final Notes on Testing

Different tests are constructed for different purposes. Some tests are tightly linked to curricula, while others are not. Local school board members should ensure that the tests which their districts choose are either used for the purpose designated by the test developers, or that they provide a sound rationale for any new purpose.

Further, school boards may need to make contextual decisions about the way results will be judged and compared. In short, local school board members need to be familiar with the various types of tests to determine if they can be validly used to evaluate curricula or programs.

Part Four:

Other Indicators of Achievement and the Quality of Schools

As noted at the outset of Part Three, tests are not the sole indicator of how a student, school, or system is performing. There is much more to education than percentile ranks. Thus, Part Four will provide local school board members with a description of indicators other than tests that are or can be used to indicate student achievement and the quality of schools. Some of these indicators are based on objective data, while others are more subjective in nature. Five broad categories of indicators are presented for board members' consideration: student-based indicators; teacher-based indicators; parent and community-based indicators; curriculum- and equipment-based indicators; and other indicators (see box).

Other Indicators of Achievement and the Quality of Schools

- **Student-Based Indicators**
  - Percentage of Students Taking College Admission Tests
  - Percentage of Students Taking Advanced Placement Courses/Tests
  - Percentage of Students Taking Algebra in the Eighth Grade
  - Percentage of Students Going on to College or Other Post-Graduation Alternatives
  - Percentage of Students Meeting State Mandates
  - Dropout and School Completion Rates
  - Promotion and Retention Rates
- **Teacher-Based Indicators**
  - Percentage of Teachers with Majors or Minors in Teaching Areas
  - Percentage of Teachers Attaining Regular Certification
  - Teacher Expertise and Experience
- **Parent- and Community-Based Indicators**
  - Parental Involvement
  - Level of "Consumer" Satisfaction With a District's Graduates
- **Curriculum- and Equipment-Based Indicators**
  - Average Age of Textbooks
  - Adequacy of Scientific Laboratory and Field Equipment
  - Effective Use of Technology in Student Learning
- **Other Indicators**
  - Programs to Develop the Whole Child
  - Engagement of School with External Organizations
  - Innovative Projects
  - Class Size
  - Per-pupil Expenditures

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Student-Based Indicators

Percentage of Students Taking College Admissions Tests

The percentage of students taking college admissions tests reflects, in part, the academic emphasis of the district. However, this indicator should be approached gingerly. *The Forgotten Half*, a document written several years ago, pointed out that only half of America's high school graduates went on to higher education. Schools, this report claimed, were oriented towards these students, forgetting the 50 percent who planned to enter the job market, seek some technical or vocational training, or enlist in the military.

School boards certainly do not want to ignore the needs of any students; nor do they want to limit students' options. Increasingly, school districts are offering school-to-career programs with expectations and performance standards that allow students a range of choices after graduation. Because these "certificate" programs link vocational training with a rigorous academic program, they enable students to get good jobs directly out of high school, join the military, or choose to attend a university or two-year community college.

Percentage of Students Taking Advanced Placement Courses/Tests

The College Board develops Advanced Placement (AP) courses and their accompanying tests. If a district does not provide College Board-specified AP courses, it can usually designate other "advanced" or "accelerated" courses to serve the same function.

AP courses are offered in roughly half of American high schools. More than 900,000 students took one or more tests in 1997 (a nearly ten-fold increase over the 98,000 students who took them 20 years earlier). The tests are offered in 29 subjects, with U.S. History, English Literature, and Calculus being the most popular; more than 100,000 students take tests in each of those subjects.

Again, taking demographic changes into account, changes over time in the proportions of students taking the various kinds of advanced courses can be revealing. The proportion of students taking AP courses and tests can provide some index of the degree to which a district is encouraging students to (a) take challenging courses and (b) continue on to higher education. The test scores are one index of how well the district is preparing the students that it is challenging with this advanced curriculum.

Percentage of Students Taking Algebra in the Eighth Grade

Some years ago, the College Board said that high school algebra appeared to be a "gatekeeper" of academic achievement. Students who took algebra in the eighth or ninth grade were found to take a much stronger academic program in later years and to be much more likely to attend college. The board recommended that more students should be encouraged to take algebra, and its Equity 2000 project works with a number of school districts to help ensure that all students complete Algebra I by the end of ninth grade.

However, while there is a correlation between taking algebra early and taking more advanced math and science courses later on, that correlation might not mean that algebra is a gatekeeper. It might well be that students who take algebra in the eighth and ninth grades are those whom schools have identified as capable of handling an academic curriculum and have encouraged to take higher-level courses. Schools should be careful to ensure that all students who have the ability to take algebra in the eighth or ninth grade have that opportunity. On the other hand, they should not pressure those who cannot handle algebra to take that subject too early, because those students may become frustrated and discouraged.

According to *Education Watch*, a state and national data book prepared by The Education Trust—a Washington, D.C.-based organization created to promote high achievement for all students—algebra placements may be less objective than the public believes. Its 1996 report said that researchers who reviewed the relationship between performance on the Comprehensive Test of Basic Skills and placement in algebra in one large California school district found some glaring inequities. They found that 100 percent of the Asian and 87.5 percent of the white students performing in the top quartile of the test were enrolled in algebra, while only 51 percent of the African-American and 42 percent of Latino top-quartile students were enrolled. The study found that Asian students who performed in the third quartile were more likely to be placed in algebra than African-Americans and Hispanics who scored in the top quartile.

Percentage of Students Going on to College or Other Post-Graduation Alternatives

Many schools and districts often simply report the proportion of students going on to college, without necessarily specifying whether those colleges are two- or four-year institutions.

Nationally, over the last few decades, school districts have attempted to encourage more students to enter the college track. In 1994, a chart in *Education Week* showed that 62 percent of June's high school graduates were enrolled in college the following fall. That publication also reported, however, that studies indicate that at least 75 percent of young people want and expect to earn a college degree. The gap between college expectations and actual enrollments also may serve as a useful indicator, suggesting the extent to which our schools adequately prepare students for college entrance.

In addition, schools might want to look at the proportion of students who are in the kind of post-high school program they find appropriate. How many are in college? How many are in the military? How many are in jobs that are not low-paying, dead-end positions? How many are in vocational training programs? How many are not enrolled in any post-school activity? A profile of participation in the various post-graduation alternatives would seem to be one appropriate way to determine if the school or system is a high-achieving one.

Percentage of Students Meeting State Mandates

The proportion of students taking the kind and number of courses required for advanced diplomas could constitute an index of achievement at the school or system level. After the 1983 publication of "A Nation At Risk," a number of states created differentiated diplomas. Students could earn a standard diploma for taking a certain number of courses or receive an "honors

diploma" by taking more courses—usually four years of math and social studies, three years of science, and at least two of a foreign language. (Most states already required four years of English.) Care must be taken to maintain the integrity of courses offered. A study on this issue from the University of Wisconsin found no evidence that courses were being watered down as more students attempted them.

State mandates also come, increasingly, in the form of tests. The sanctions applied from these tests vary from state to state—students can fail to obtain a diploma, principals can be transferred, and schools can lose their accreditation or even be taken over by the state if they do not meet the standards established by the tests. Most of these mandates come with some means of punishing schools that fail to meet the mandate; few come with any way of celebrating those who exceed it.

The percentage passing such tests can be used as an index of achievement as long as everyone is satisfied that the test reflects what is being taught in the classroom. One variation on "percentage passing" overall is to report the proportion of students passing on the first attempt, on the second attempt, and so on. The goal would be to increase the number of students who pass the tests the first time.

Dropout and School Completion Rates

The dropout rate is often one of the most difficult statistics to report accurately. Different districts have different ways of defining "dropout." The definition sometimes includes students who have merely left one district for another a thousand miles away. For many districts, a student is not a dropout until a certain period of time (highly variable) has passed and no other district has claimed that student.

Nationally, the U.S. Department of Education defines a dropout as a person aged 16-24 who is not enrolled in school and who is not a high school graduate. By that definition, the dropout rate declined from 14.1 in 1976 to 11.1 percent in 1996. Although dropout rates for all races declined in the last two decades, in 1966 they still remained nearly twice as high for blacks (13 percent) and four times as high for Hispanics (29.4) as for whites (7.3 percent). School boards may want to take careful stock of the dropout prevention initiatives they have implemented or may want to consider initiating alternative education programs if they have not already done so.

As an indicator, percentage of on-time graduation has some drawbacks. If pressure is brought to bear on a district to increase on-time rates, there may be some danger of increasing the number of students graduated for "seat time." This indicator would be best used in conjunction with others that relate to the maintenance of standards and special programs to help lower achieving students to reach them.

School completion rates focus on those students who receive a high school diploma or its equivalent. According to the U.S. Department of Education, in 1950—which school critics think of as the "good old days"—only 34 percent of the population completed four years of high school. In contrast, school completion rates today show that about 86 percent of 22-year-olds have completed high school or its equivalent.

Promotion and Retention Rates

In recent years, the issue of "social promotion," in apparent contrast to promotion for achievement, has been debated extensively. Most researchers generally oppose the idea of retention, arguing that retention in grade is not a particularly attractive alternative. According to a study by John Hattie at the University of North Carolina at Greensboro, retention in grade was the worst of 41 innovations introduced to improve achievement, and was one of the few that actually had negative results. A Johns Hopkins study of inner-city Baltimore students found, however, that those who repeated a grade in elementary school saw their grades, test scores, and self-esteem improve.

One alternative for students who are at risk of grade retention (or simply achieving well below their peers), is to provide extra assistance before promoting.

When children are retained, they seldom blossom the next year into high achievers. They do better as they repeat the material for a second year, but they often struggle. One alternative for students who are at risk of grade retention (or simply achieving well below their peers) is to provide extra assistance before promoting. The extra assistance might occur in school, after school, during summer school, or even during weekends. Some researchers contend that schools should be flexible enough to give all children the instructional depth and time they require to make progress.

Teacher-Based Indicators

Percentage of Teachers with Majors or Minors in Teaching Areas

Teachers cannot teach what they do not know. While subject knowledge needs to be augmented by skills in pedagogy, teachers must first know the subject matter. Unfortunately, many teachers do not have even a minor in the subject they teach. At the secondary level, 23 percent of teachers do not have even a college minor in their main teaching field. The problem is exacerbated in high-poverty schools—one-third of public school teachers in high-poverty areas are without a minor in their main field, compared with only eight percent of teachers in low-poverty schools. (For further discussion of this issue, see *What Matters Most: Teaching for America's Future*, a 1997 study from the National Commission on Teaching and America's Future.)

While possessing a major or minor in a subject area other than education is no guarantee of a high-quality teacher, teachers who have majored in a subject are likely to be more committed to it and to bring more enthusiasm to its teaching. Different considerations may exist at the elementary school level, of course. There, teachers often need expertise in many subject areas but may not necessarily need a minor in mathematics, for example, to teach that subject at a third-grade level.

Percentage of Teachers Attaining Regular Certification

This indicator of achievement is currently controversial in some quarters. Some hold an "anyone can teach" belief, while others contend that training in pedagogy is absolutely crucial. Even within the ranks of those who believe that certification is necessary, many argue that the certification process is badly flawed. Perhaps the most thoughtful report on this issue is *What Matters Most: Teaching for America's Future*, which critiques the teacher preparation and certification process:

> Although no state will permit a person to fix plumbing, guard swimming pools, style hair, design a building, or practice medicine without completing training and passing an examination, more than 40 states allow districts to hire teachers on emergency licenses who have not met these basic requirements. States pay more attention to the qualifications of veterinarians treating the nation's cats and dogs than to those of teachers educating the nation's children and youth (p. 14).

The National Commission on Teaching and America's Future, together with many other education organizations, support a "three-legged stool" approach to help ensure teacher quality: accreditation, licensing, and certification. The National Council for Accreditation of Teacher Education has developed standards for teacher education programs. Under the auspices of the Council of Chief State School Officers, a consortium of more than 30 states and professional organizations has created performance standards for initial teacher licensing. And the National Board for Professional Teaching Standards has established standards and assessments for certifying accomplished teachers. School board members may want to learn more about these organizations' standards, which could help guide local teacher hiring and evaluation policies.

Teacher Expertise and Experience

Relatively few teachers have access to sustained, intensive professional development about their subject matter, teaching methods, or new technologies. . .

Although several studies have found no relationship between teacher education levels and student outcomes, a quantitative review of 46 studies—all of which employed data averaged over schools or districts—concluded that there is a positive relationship between levels of teacher education and levels of student test scores (Greenwald, Hedges, and Laine 1996). Another study, published by the New York City Board of Education, which compared high-achieving and low-achieving schools that had similar demographics, found that differences in teacher qualifications accounted for a substantial portion of the variation in student achievement in reading and mathematics. Additional studies, conducted at the classroom level, will be required to determine the precise magnitude of the relationship between teacher expertise and student achievement.

In many districts, the most inexperienced teachers often get the toughest assignments. Seniority rules frequently allow more experienced teachers a choice of assignments, and many elect to work with the most academically advanced students or in schools or classes with fewer disciplinary and related problems. Board members might wish to assess the presence of this policy in their district and, if it exists, to assess its impact on teacher competency and morale as well as on student achievement. School boards may also want to review whether or not their recruitment policies are effective in attracting experienced teachers.

Professional Development Activities for Teachers

The history of professional development in this country has often not been a particularly happy one. Nationally, relatively few teachers have access to sustained, intensive professional development about their subject matter, teaching methods, or new technologies, according to "Doing What Matters Most: Investing in Teaching Quality." Often, professional development activities are short-term and may not be what teachers want or need. This situation is exacerbated in some schools where there is intense pressure to keep teachers in their classrooms during the school day. This pressure often forces staff development activities to take place in the evenings or weekends.

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Many districts, however, are trying new approaches to professional development which connect teachers to each other through in-school teams and professional committees that include teachers from all schools in a district. These professional development opportunities, described in *What Matters Most*, share certain features. They are connected to teachers' work with their students, linked to concrete teaching tasks, organized around problem solving, informed by research, and sustained over time by ongoing conversations and coaching. The Key School in Indianapolis, for example, devotes every Wednesday afternoon to a faculty planning and evaluation meeting. While students listen to presentations from community members in the auditorium, faculty members discuss a wide range of problems and make long- and short-term plans.

Board members might want to explore the possibility of evaluation meetings in their districts and discuss with teachers ways to create more effective professional training opportunities.

Parent- and Community-Based Indicators

Parental Involvement

Parental involvement has long been recognized as an important indicator of a school's success. In its 1997 publication, "National Standards for Parent/Family Involvement Programs," the National PTA notes that research findings document the "profound and comprehensive benefits for students, families, and schools, when parents and family members become participants in their children's education...."

One—but certainly not the only—measure of involvement is the proportion of parents attending PTA and other parent organization meetings. Unfortunately, this indicator is highly sensitive to demographics and outside realities. In some districts, for example, working parents who are extremely committed to their children's education may find it very difficult to attend PTA meetings at night, when they are exhausted from working long days and want to spend time with their children. Schools will need to be sensitive to the real-world demands on families when scheduling back-to-school nights, parent-teacher conferences, and other school-related events.

Many school districts have found a variety of successful ways to involve parents in their children's education. The Niles (Illinois) Elementary School District, as just one example, has extensive family and community involvement programs which feature family education nights in math and other curricular areas, parent workshops on issues ranging from discipline to school readiness, and family field trips to local museums. The district's Family Resource Center lends parents grade-level "skill boxes," which contain activities that reinforce the school curriculum. Its school volunteer program allows parents and community members to make either a one-time or sustained commitment, and its regularly published newsletter keeps parents informed of school events.

Level of "Consumer" Satisfaction with a District's Graduates

The word consumer is somewhat ambiguous. Education reformers who speak of consumer satisfaction typically have in mind the three major institutions which receive graduates: the workplace, the military, and the institutions of higher education. However, parents also should be considered as consumers, as should the students themselves.

One indicator of the level of consumer satisfaction would be to ask local businesses their opinions of the academic preparation and workplace values of high school graduates. Feedback of this kind would have to be evaluated carefully, because some businesses might equate higher skill levels with specific job training that is usually not offered, and might not be appropriate, in an educational setting. Some employers, too, may pay at or near the minimum wage but expect unrealistically high skill levels for low wages.

Another way to test consumer satisfaction is to survey parents and students, which many school districts do on an annual or biennial basis. Nationally, the annual Phi Delta Kappan/Gallup Poll of the Public's Attitudes toward Public Education also offers insights into the public's attitudes toward public schools. Last year, 46 percent of respondents gave their local public schools a grade of "A" or "B," compared with 56 percent of public school parents. School boards might want to employ a variety of formal and informal techniques to determine how parents, community members, and businesses view their students' high school preparation.

Curriculum- and Equipment-Based Indicators

Average Age of Textbooks

In some states, science textbooks still suggest that man might one day walk on the moon. The importance of current textbooks can vary by subject, however. Science and mathematics are in most critical need of current textbooks, since both content and approaches to the subject matter have changed considerably in the last 25 years. In subjects such as English, where the canon of literature may not change very frequently, basic textbooks can perhaps be older but might be supplemented by contemporary literature.

Along with the age of textbooks, achievement indicators may include whether or not texts are available in sufficient number for each child to have one, and whether or not the selection process is aimed at quality of content and relevance to school system standards and curriculum. (School board members may want to review the questions regarding the alignment of textbooks with high standards in Part Two.)

Adequacy of Scientific Laboratory and Field Equipment

The operative—and difficult—word in this area is "adequacy." Older equipment that is not state of the art might well be adequate for instruction in basic skills. In a few instances, older equipment might actually increase skills. In the days when computer memory was scarce, for example, programmers became much more adept at writing programs that conserved memory than they are today with the advent of multi-gigabyte hard drives.

On the other hand, outdated computers cannot give students access to the Internet, which most districts consider an important research tool. Nor can they run sophisticated graphics software, such as "Dance of the Planets," an astronomy teaching program which allows students to gain a better understanding of the universe by seeing the planets in their proper orbits around the sun and in their relationships to each other.

Effective Use of Technology in Student Learning

The mere physical presence of technology in school systems will not automatically raise student achievement. However, if technology resources are properly designed and used, as a part of the education program, student learning can improve. According to the CEO Forum on Education and Technology, there are four resource indicators of a well-designed learning environment: the availability of hardware (e.g., 2-5 students per computer); a high level of connectivity (e.g., Internet and high-speed lines); quality content (current digital content); and professional development (e.g., hours of training and years of experience).

Additionally, the effectiveness of the use of technology can be measured by the extent that it is integrated and regularly used in the classroom. Used properly, technology is not simply skill training in the use of a machine and its software. Nor is it simply "running" a software program with no thought as to how it adds to an overall learning strategy. If used strategically, technology can aid in producing student-centered learning, improving higher-order thinking and learning skills, providing universal access to information, fostering collaborative learning and teamwork, and extending education communication outside the school. Indicators of success can include these latter factors as well.

Other Indicators

Programs to Develop the Whole Child

As Part One of this primer indicates, education has numerous purposes beyond preparation for the work force. The measure of a system that places value on the development of other student attributes can be found in the quality and scope of its programs in art, music, character education, athletics, community service, etc.

Engagement of School with External Organizations

A host of activities can be envisioned under this indicator of achievement. Most obvious, perhaps, are partnerships with business and industry in school-to-work programs, but other possibilities abound and will depend on local circumstances. School districts can tap a local university for intellectual resources, inviting professors in various science departments to describe what they do, for example. Museums are often excellent resources for schools to use, as are community libraries.

Innovative Projects

The use of projects such as fairs and demonstrations permits students a longer-term, more intense involvement with a subject area. Such projects can be a source of pride for the students and, on occasion, a revelation for teachers. At one Colorado high school that had demonstrations where students constructed applications of geometry, some teachers were surprised to see that "average" students had constructed some of the cleverest applications. Translating academic knowledge into real-world applications can be a powerful force in raising student achievement.

These kinds of projects can often be augmented and increased in value through the kinds of connections with other institutions described in the preceding indicator.

Class size

While the debate over class size has been an ongoing one, a review of the literature generally found positive effects of smaller class size (Greenwalk, Hedges & Laine, 1996). A 1997 study indicated that small class sizes produced better achievement and better emotional climates than larger ones (Wenglinsky, 1997). The key seems to be the role of the teacher, and whether that role does or does not change, as class size decreases.

The definitive study of class size comes from Project STAR in Tennessee, where classes in the first three grades were reduced to 13-17 students (Mosteller, 1996). The students in small classes showed increased achievement; those effects have now been sustained through the ninth grade. What makes the Project STAR results so important is that students and teachers were randomly assigned within each school to regular classrooms (22-25 students), small classrooms (13-17 students), or regular classrooms with a teacher's aide. Such assignment means that it was virtually impossible for any sort of selective bias (e.g., socioeconomic status of students, teacher training) to operate in favor or one treatment or another. There was a small gain for classrooms with an aide, but a much larger one for small classrooms, an effect, as noted above, that has been sustained since the students left their small classes at the end of grade 3.

Per-pupil Expenditures

One often hears critics admonishing, "Don't throw money at the schools," because money doesn't matter. University of Rochester Professor Eric Hanushek contends, in a controversial 1989 article in *Educational Researcher*, that "There is no systematic relationship between money and achievement." However, two more recent re-analyses of Hanushek's review of some 65 studies demonstrate that Hanushek's own data reveal a correlation between spending and achievement.

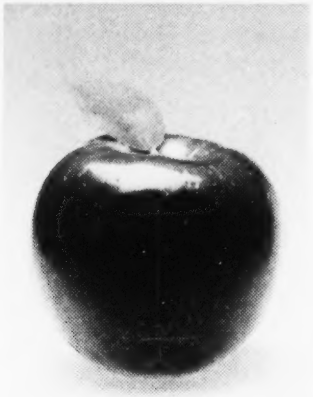
Other studies have examined state-level NAEP scores, state-level SAT scores, and district-level test scores in relation to educational spending. All find a relationship—more money is associated with higher achievement. For example, one study found that for every $1,000 difference in state spending on education, there was a 15-point difference in SAT scores (after SAT participation rates had been statistically adjusted to make them comparable across states).

Finally, contrary to the claims of some critics, spending on education has not "skyrocketed" in recent years. Between 1967 and 1992, new real spending for schools increased by 60 percent, but much of that went to special education and targeted populations. When expenditures for special education students are excluded, real spending increased by approximately 35 percent over the 25-year period. A more recent study indicates that spending on instruction in schools in the 1990s has been nearly flat.

The Importance of Alternative Indicators of Success

Tests scores, especially from state and national tests, will always play a significant role in evaluating academic achievement. However, tests alone do not tell the whole story of how well a system is educating its students. A host of other indicators, from class size to teaching training, can demonstrate that programs are rich and relevant. Those additional indicators of achievement can also build community support. Local school boards must decide which indicators best fit their vision of their school system.

Conclusion



Preparing America's children for the challenges of an increasingly global and information-driven society is our nation's most important priority. This primer was designed to help school board members fulfill their leadership role in public education and to assist them in raising the bar for student achievement in local communities across the nation.

Substantive information was provided on setting standards, using tests, identifying indicators of success, and defining approaches for aligning resources to meet student achievement goals. This primer also presented board members with ideas on how to use that information in the context of their school board governance role. But no single document can provide all the information or answer all the questions. Therefore, a directory of resources to link readers to other information sources was also provided. After reading this primer, and using it as an on-going reference, local school boards should have a strong foundation to effectively approach their student achievement mission.

There has been no other time in our nation's history that local school board service has been more rewarding to those board members who have the tools to lead. In an effort to provide those tools, NSBA will be producing more reports on various aspects of student achievement. Together, we can make a difference in providing the best education possible to the children of this great country.

Appendix A:

Information Sources For Local School Board Members

Key Student Achievement Resources

One publication cannot provide school board members with all the available information on student achievement. However, it can provide easy access to the leaders in the field.

The following index will put school boards in touch with important data (e.g., NCES, the TIMSS survey, NSF), indicators of student achievement (e.g. NEGP), studies (e.g. AAAS, AERA, TIMSS), innovative ideas (e.g. NAB, NAS), state-by-state comparisons and activities (e.g., CCSSO, NCES, NEGP), and information developed for and about the local school board role in student achievement (NSBA).

ACHIEVE
1280 Massachusetts Avenue, Suite 410
Cambridge, MA 02138
617/496-6300
617/496-6361 (fax)
http://www.achieve.org

AMERICAN ACADEMY FOR THE ADVANCEMENT OF THE SCIENCES
1200 New York Avenue, NW
Washington, DC 20005
202/326-6400
202/371-9849 (fax)
http://www.aaas.org

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION
1230 17th Street, NW
Washington, DC 20036-3078
202/223-9485
202/775-1824 (fax)
http://aera.net

ASSOCIATION FOR SUPERVISION AND CURRICULUM DEVELOPMENT
1250 North Pitt Street
Alexandria, VA 22314-1453
703/549-9110
703/299-8631 (fax)
http://www.ascd.org

Council for Basic Education
1319 F Street, NW, Suite 900
Washington, DC 20004-1152
202/347-4171
202/347-5047 (fax)
http://www.c-b-e.org

Council of Chief State School Officers
One Massachusetts Avenue, NW, Suite 700
Washington, DC 20001-1431
202/408-5505
202/408-8072 (fax)
http://www.ccsso.org

Education Commission of the States
707 17th Street, Suite 2700
Denver, CO 80202-3427
303/299-3600
303/296-8332 (fax)
http://www.ecs.org

Mid-continent Regional Educational Laboratory
2550 South Parker Road, Suite 500
Aurora, CO 80014
303/337-0990
304/337-3005 (fax)
http://www.mcrel.org

National Alliance of Business
1201 New York Avenue, NW, Suite 700
Washington, DC 20005
202/289-2888
202/289-1303
http://www.nab.com

National Association of State Boards of Education
1012 Cameron Street
Alexandria, VA 22314
703/684-4000
703/836-2313 (fax)
http://www.nasbe.org

National Center for Education Statistics (including TIMSS)
555 New Jersey Avenue, NW
Washington, DC 20208-5574
202/219-1828
202/219-1736 (fax)
http://www.nces.ed.gov/timss

National Center for Research on Evaluation, Standards, and Student Testing
University of California at Los Angeles
301 GSE & IS
Box 152206
Los Angeles, CA 90095-1522
310/206-1532
310/825-3883 (fax)
http://www.cresst96.cse.ucla.edu

National Center on Education and the Economy
700 11th Street, NW, Suite 750
Washington, DC 20001
202/783-3668
202/783-3672 (fax)
http://www.ncee.org

National Education Goals Panel
1255 22nd Street, Suite 502
Washington, DC 20037
202/724-0015
202/632-0957 (fax)
http://www.negp.gov

National Center for Improving Student Learning and Achievement in Mathematics and Science
Wisconsin Center for Education Research
University of Wisconsin - Madison
1025 West Johnson Street
Madison, WI 53706
608/265-6240
608/263-3406 (fax)
http://www.wcer.wisc.edu/NCISLA

National School Boards Association
1680 Duke Street
Alexandria, VA 22314-3493
703/838-6722
703/683-7590 (fax)
http://www.nsba.org

National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230
703/306-1234
703/306-0090 (fax)
http://www.nsf.gov

New American Schools
1000 Wilson Boulevard, Suite 2710
Arlington, VA 22209-3901
703/908-9500
703/908-0622 (fax)
http://www.naschools.org

U.S. Department of Education
600 Independence Avenue, SW
Washington, DC 20202
800/USA-LEARN
202/401-2000
202/401-0596 (fax)
http://www.ed.gov

Appendix B:

Opportunity to Learn Indicators—The Context of Achievement

From birth to age 18, children spend nine percent of their lives in schools. While this nine percent is likely to be a more intense and focused time than that spent out of school, it still leaves a good deal of room for a child's life to be influenced by non-school factors. This section discusses the most important out-of-school factors that can influence student achievement (see box).

Opportunity to Learn Indicators
• Teenage Pregnancy Rates and Participation in Parenting Courses
• Percentage of Female-headed Households
• Poverty Rate
• Student Mobility Rate
• Paternal and Maternal Education Levels
• Percentage of Students for Whom English is Not Their Native Language
• Number of Violent Incidents Per Year
• Number of Annual Police Visits/Disciplinary Actions
• Demographic Trends
• Physical Condition of Schools

These factors are not excuses for not holding students to high expectations, but they should be considered in evaluating both individual student performance and that of the district. Some of these factors, which relate to both education and the quality of students' lives, may also be crucial to consider as school boards develop their achievement plans. School boards may want to involve city, county, and community organizations, as well as local businesses, in programs that both raise achievement and improve the quality of their students' lives. These programs might, themselves, become indicators of student achievement.

In this primer, Opportunity to Learn (OTL) variables are defined as factors, beyond the school system's direct control, that have a bearing on achievement. During discussions of national standards and national testing, OTL variables were the subject of heated debate. Many considered it unfair to hold all students to the same standard without taking into account the context of the situation. How would schools in poor urban and rural areas meet the same standards as those in affluent suburbs?

Other educators and policymakers agreed that taking OTL variables into account was merely an excuse for continuing low achievement. Thus, when New Jersey statistically adjusted test scores by taking into account students' socioeconomic status, it demonstrated that, had its students been more affluent, they would have scored as high as those in wealthier states. This adjustment, according to critics, simply obscures real problems. A high-poverty state, like New Jersey, does not have the same demographics as other states, and it needs to raise achievement levels for the students it does have.

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Opportunity to Learn Indicators

Teenage Pregnancy Rates and Participation in Parenting Courses

Nationally, teen pregnancy rates have been falling slightly for the last few years for all groups except Hispanics. These rates are still much higher than they were 25 years ago, and the rate for blacks and Hispanics is about four times the rate for whites.

Independent of any moral or economic considerations, teen pregnancy has implications for education. Research has shown that seven out of 10 adolescent mothers will drop out of high school. In addition, children of teenage mothers are far more likely to be physically abused, abandoned, or neglected than the offspring of older mothers. These negative outcomes are reduced in the teens who are enrolled in parenting classes which provide instruction in pre-natal and post-natal care. To enable adolescent mothers to stay in school, some school districts also provide on-site day care for their young children.

Percentage of Female-headed Households

Single-parent households, especially those headed by a single female parent, are often affected by severe economic problems. These households are often below the poverty line, which was, as of late 1997, just under $16,000 for a family of four. Although the research is not conclusive on the psychological effects of single-parent families on children, single-parentness is often associated with the stresses of poverty, which are discussed below.

Poverty Rate

In 1995, more than 14 million children—some 20.8 percent of all children—were classified as poor. While not an excuse for not learning, poverty is a condition that affects many aspects of life. Consider this description from the Ohio Children's Defense Fund:

> Poor children are more likely to have mothers who get late prenatal care and are more likely to be born small. Medical studies show that poor children are three times more likely to have stunted growth, often as a result of inadequate diets. Low-income youngsters are more likely to drown, suffocate or be injured in a fire. Poor children are also about twice as likely to have physical or mental disabilities. Childhood death rates for poor youngsters are three times as high as those for other children, often the result of unsafe living conditions. Poor children are seven times more likely to be abused or neglected.

The effect of poverty can be seen in schools across America. A recent U.S. Department of Education study of the federal Title I program reports that high-poverty schools put "disadvantaged students in double jeopardy." School poverty "depresses the scores of all students in schools where at least half the students are eligible for subsidized lunch and seriously depresses the scores when over 75 percent of students live in low-income households," the report says.

As part of their achievement plan, school boards confronted with high poverty might want to investigate those strategies that are successful in educating poor children. Research has shown

that, although curricula and methodology vary considerably from district to district, successful high-poverty schools have certain similar characteristics: high standards; the constructive use of test scores; a willingness to take every necessary step to meet students' needs; strong parental involvement; and a vision that includes goals and a plan to reach them. The Center for Research on Education of Students Placed at Risk, located at the Johns Hopkins University in Baltimore, can offer school board members information about successful strategies.

Student Mobility Rate

Students who move around a good deal, even within a single district, are much more likely to eventually drop out than those who have a stable school environment.

Student mobility in this country is exceptionally high: 20 percent of children change schools annually. In urban centers, that figure may reach 50 percent in some schools as the result of family and economic instability. Studies show that this mobility produces difficulties for the children and their teachers. A child moving into a new school, or returning to his former school in mid-year, might be ahead of or behind his peers, or might have learned a very different approach to, say, science or mathematics. Many school districts are confronting this challenge by evaluating new students shortly after they arrive and offering interventions as soon as they appear necessary.

High student mobility also may affect learning among stable student populations. Classroom disruptions, due to the frequent arrival of students who are not familiar with the curriculum and classroom practices, may result in less instruction time and lower achievement for all students.

Paternal and Maternal Education Levels

These are among the most powerful predictors of school achievement that schools cannot control. Well-educated parents are likely to want even more education for their children. They can, as well, bring intellectual power to bear at home and perhaps financial power to provide educational materials. Finally, they have experience with the educational system and can assist their children to "work it" in their favor.

Accordingly, a school system may wish to pursue training opportunities to assist parents, especially parents with limited education, to help teach their children—including pre-schoolers whose early language development is so essential for success in elementary school.

Percentage of Students for Whom English is Not Their Native Language

While knowing another language is a wonderful asset overall, students must have a good command of English to succeed in schools. Even those who speak colloquial English are likely to have much more difficulty with the formalities of reading and writing. Over the past 10 years, there has been a 50 percent increase in the number of students for whom limited knowledge of English is a learning barrier. Of these 3.6 million English Language Learners (ELL), 50 percent live in urban centers. They are likely to contribute to the high incidence of poverty at their schools, since 75 percent of these students receive a free school lunch. Some new immigrant groups not only speak little or no English but are illiterate in their native languages as well.

The quality of programming a district provides for its ELL students—and perhaps for their parents—can indicate a system's commitment to raising achievement.

Number of Violent Incidents Per Year

Violence in schools has become an increasingly serious problem now. Although no one can say with certainty how often and in how many schools incidents occur, the U.S. Department of Health and Human Services' 1995 "Youth Risk Behavior Surveillance" report offers some disturbing statistics. According to this report, 20 percent of students nationwide had carried a weapon during the 30 days preceding the survey, nearly 39 percent had been in a physical fight, and 4.5 percent had missed at least one day of school because they had felt unsafe either at school or when traveling to and from school.

In December, 1997, President Clinton ordered the Department of Education and the Department of Justice to annually compile a list of violent incidents in schools. Before those lists become available, school districts may want to develop their own categories for classifying violent incidents and determine how they will treat certain offenses.

Number of Annual Police Visits/Disciplinary Actions

Excluding visits made by officers as part of a drug awareness or other instructional program, occasions where officers are summoned to schools because of an incident or threat should be compiled and tracked. Likewise, the number and trends in specific kinds of disciplinary incidents and actions provide an indicator of the learning environment.

Demographic Trends

Immigration patterns and socioeconomic shifts are the demographic trends mostly likely to have an impact on schools. The impact can be either positive or negative, although immigration is likely to put stress on a school. In the First International Adult Literacy Survey published in 1995, the United States had far and away the highest proportion of immigrants reading at the lowest level.

The nation's secondary schools also are seeing increases in the percentages of students older than 18 who attend. According to the U.S. Department of Education, the percentage of seniors in U.S. public high schools who are 19, 20, or 21 years old nearly doubled in a decade, rising from four percent in 1984 to seven percent in 1994. Many of these students are in special education programs, others are immigrants who do not speak English or were delayed starting school in their native countries, while still others are students whose family, educational, or social problems have prevented them from graduating earlier.

As part of their overall achievement plan, school districts will need to determine how to best educate these populations. As one example, some school districts have opened "newcomer" schools for recent immigrants.

Physical Condition of Schools

Many of the nation's schools are physically in very poor shape. The U.S. General Accounting Office (GAO) estimated that it would cost $112 billion nationwide to address such problems such as fire-code violations, building maintenance, air-quality problems, roof and other repairs. The GAO also said that nearly half the nation's schools have inadequate electric wiring for computer and communications technology.

In addition, many schools districts, faced with enrollment surges, are overcrowded. The U.S. Department of Education estimates that 6,600 more schools will be needed by 2006 to house new students, and additional schools may be necessary to replace aging buildings.

The physical condition of schools certainly affects morale, and school boards will want to determine what effect it has on technology and other programs, class size, and other elements of education. Many school boards might want to include advocacy for bond issues and tax levies as part of their overall achievement plans.

About NSBA

NSBA's Mission Statement

The mission of the National School Boards Association, working with and through all its Federation Members, is to foster excellence and equity in public education through school board leadership.

NSBA's Shared Vision

NSBA and its Federation Members represent 95,000 local school board members who are dedicated to educating every child to his or her fullest potential. In 1996, Federation leaders came together to forge a plan for increasing student achievement through school board leadership. This effort coalesced into a strategic vision—a vision of the National School Boards Association as a powerful, united, energetic Federation . . . as the premier advocate for public education . . . as an influential force for achieving equity and excellence in public education . . . and as a catalyst for aligning the power of the community on behalf of education.
Underlying this shared vision are certain bedrock convictions:

- belief that effective local school boards can enable all children to reach their potential
- conviction that local governance of public education is a cornerstone of democracy
- belief in the power of local school boards to convene the community around education issues
- conviction that together, local school boards can influence education policy and governance at the state and national levels
- commitment to the principle that through collaboration comes impact
- belief that the strength of local school board leadership arises from the board's capacity to represent the diversity of students and communities

The National School Boards Association is the nationwide advocacy organization for public school governance. NSBA's mission is to foster excellence and equity in public elementary and secondary education in the United States through local school board leadership. NSBA achieves its mission by amplifying the influence of school boards across the country in all public forums relevant to federal and national education issues, by representing the school board perspective before federal government agencies and with national organizations that affect education, and by providing vital information and services to Federation Members and school boards throughout the nation.

NSBA advocates local school boards as the ultimate expression of the unique American institution of representative governance of public school districts. NSBA supports the capacity of each school board—acting on behalf of and in close concert with the people of its community—to envision the future of education in its community, to establish a structure and environment that allow all students to reach their maximum potential, to provide accountability for the people of its community on performance in the schools, and to serve as the key community advocate for children and youth and their public schools.

Founded in 1940, NSBA is a not-for-profit federation of state associations of school boards across the United States and the school boards of the District of Columbia, Guam, Hawaii, and the U.S. Virgin Islands. NSBA represents the nation's 95,000 school board members. These board members govern 14,772 local school districts that serve more than 46.5 million public school students—approximately 90 percent of all elementary and secondary school students in the nation. Virtually all school board members are elected; the remainder are appointed by elected officials.

NSBA policy is determined by a 150-member Delegate Assembly of local school board members from throughout the nation.

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Excellence and Equity in Public Education through School Board Leadership